

PUBLIC UTILITIES

FORTNIGHTLY

including the 30th Annual  A.G.A. Convention, Oct. 4-8



Natural Gas Spans the Red River

OCTOBER 7, 1948



GAS THE UNDER FLAME

A special collection of authoritative
news stories with the gas utility
industry today and tomorrow



ESTATE
Gas Ranges



THE ESTATE HEATROLA DIVISION, NOMA ELECTRIC CORPORATION,
HAMILTON, OHIO

Models built to  Standards



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THE BARBER



Attractive folders on this Regulator will be furnished free, for your trade. Write for catalog and price list on Barber Burner Units for Gas Appliances, Conversion Burners for Furnaces and Boilers, and Regulators.

*Certified by A. G. A. Testing Laboratory.
Sizes 1/4" up.*

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● As you know, the name Barber is an assurance of dependable quality. Here is a gas pressure regulator whose design is tried and tested, made with rugged body, brass operating parts, phosphor bronze springs, and diaphragms of finest sheepskin, properly processed for domestic delivery pressures (for low pressure on LP gas, diaphragms are of Vulcan Proofing). A Barber Regulator is a precision device, responds to 3/10 pressure drop, and can be relied on for continuous operation. A good regulator is the only regulator worth your money or your customer's. Barber's 30-year record is a guarantee of satisfaction. When ordering please specify type of gas.

THE BARBER GAS BURNER CO., 3704 Superior Avenue, Cleveland 14, Ohio

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Barber Burners For Warm Air Furnaces, Steam and Hot Water Boilers and Gas Appliances

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Public Utilities

FORTNIGHTLY

VOLUME XLII

OCTOBER 7, 1948

NUMBER



ARTICLES

- What the AGA Convention Hopes
to Accomplish *Hudson W. Reed* 4
- A Well-planned Service Changeover
to Natural Gas *Larston D. Farrar* 4
- Underground Storage of Gas *D. V. Meiller* 4
- Movie Angles in a Big Construction
Job *James H. Collins* 4
- Gas Research Produces Results *Betty Lee Gough* 4
- Will Synthetics Replace Natural Fuels? *Francis X. Welch* 4

FEATURE SECTIONS

- Washington and the Utilities 5
- Exchange Calls and Gossip 5
- Financial News and Comment *Owen Ely* 5
- What Others Think 5
- The March of Events 5
- Progress of Regulation 5
- Public Utilities Reports (*Selected Preprints of Cases*) 5

- Pages with the Editors.... 6 • Remarkable Remarks....
- Utilities Almanack.....463 • Frontispiece4
- Industrial Progress..... 33 • Index to Advertisers.....

PUBLIC UTILITIES FORTNIGHTLY . . stands for Federal and state regulation of both privately owned and operated utilities and publicly owned and operated utilities, on a fair and nondiscriminatory basis; for nondiscriminatory administration of laws; for equitable and nondiscriminatory taxation; and, in general—for the perpetuation of the free enterprise system. It is an open forum for the free expression of opinion concerning public utility regulation and allied topics. It is supported by subscription and advertising revenue; it is not the mouthpiece of any group or faction; it is not under the editorial supervision of, nor does it bear the endorsement of, any organization or association. The editors do not assume responsibility for the opinions expressed by its contributors.

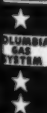
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OCT. 7, 1948

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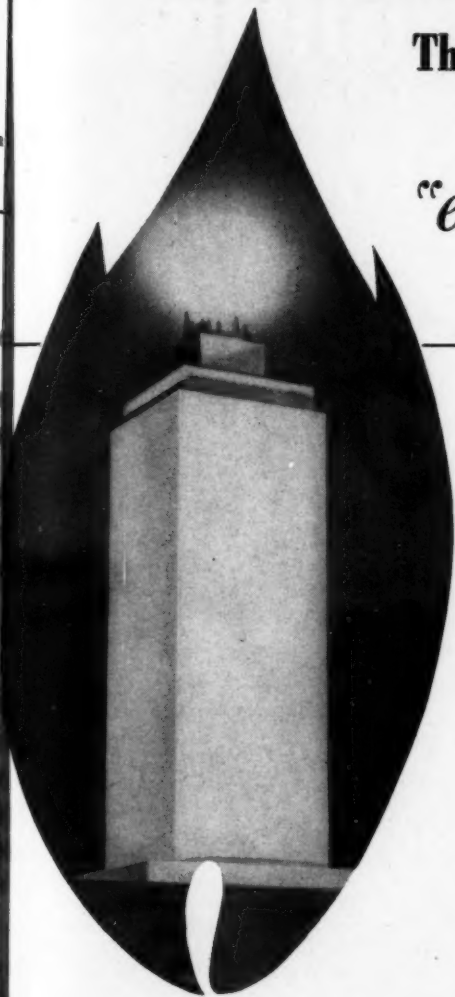
To All Delegates and Visitors To The A.G.A. Convention and The G.A.M.A. Exhibition

The Columbia Gas System

Cordially Invites You To See

"eternal flame"

The Story of Natural Gas

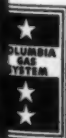


*Filmed In Gorgeous Color
With Sound, Music, Dialog*

This film, produced under Columbia's sponsorship, is believed to be the first to tell a comprehensive story of the natural gas industry. It is told in terms of people—gas people and their customers—capturing some of the drama of this public service.

*See it at the first Natural Gas
Department, A.G.A., session or in
Room B, G.A.M.A. Exhibition Hall,
Atlantic City, October 4 to 8.*

Watch For An Important Announcement At The Convention



The Manufacturers Light and Heat Company
Atlantic Seaboard Corporation
Amere Gas Utilities Company
Virginia Gas Distribution Corporation
Virginia Gas Transmission Corporation
Big Marsh Oil Company

The Ohio Fuel Gas Company
Central Kentucky Natural Gas Company
Binghamton Gas Works
Cumberland and Allegheny Gas Company
Eastern Pipe Line Company
Gettysburg Gas Corporation
Virginian Gasoline and Oil Company

United Fuel Gas Company
Home Gas Company
The Keystone Gas Company, Inc.
The Preston Oil Company
Natural Gas Company of West Virginia
Union Gasoline and Oil Corporation

Pages with the Editors

As this issue comes off the press, the members and guests of the American Gas Association are prepared to hold their thirtieth annual convention at Atlantic City, October 4th to 8th. Thirty years is a long time in the life of an industrial association in the United States and the past thirty years have certainly witnessed most important changes in the scope and function of the gas industry. Three decades ago the industry was still feeling the effect of the loss of the illuminating load to the electric light industry.

THERE were at that time skeptics who were willing to wager that the industry's future prospects were as dark as its lighting business had become. Space heating with manufactured gas was admittedly a remote possibility, and the production and use of natural gas in that period were too local to be considered of major consequence.

THE question then facing the American Gas Association was whether the industry could survive economically on cooking, water heating, and slight industrial loads when the last stronghold of the Welsbach mantles gave way to the



HUDSON W. REED

incandescent bulbs. The story of how the gas industry came back is too well known and too recent to warrant repetition in these pages at this time.

BUT the way the problems of the industry itself have shifted around are of striking significance. Today the industry is concerned not so much with finding a market for gas to sell as it is finding gas to bring to the market for sale.

IT is safe to say that the question of production and supply, involving as it does thousands of miles of pipe lines, some transcontinental in scope, is just as pressing as the industry's economic puzzles of 1918. And so today our best wishes go to the American Gas Association and its important work at Atlantic City. We know it will be just as successful in licking the problems of today as it was three decades ago.

THE leading feature in this issue is a special message from the president of the American Gas Association, HUDSON W. REED, who is also president of the Philadelphia Gas Works. He was elected to his present post in the association at



LARSTON D. FARRAR

OCT. 7, 1948

Greetings
and
best wishes
to the members
of
AGA

MICHIGAN CONSOLIDATED GAS COMPANY

the twenty-ninth annual convention held in Cleveland, Ohio, a year ago. MR. REED tells us briefly what the convention hopes to accomplish in its deliberations.

* * * *

THE casual visitor to the northwest residential district of the nation's capital during the summer of 1947 might have been surprised to see a cavalcade of gas company automobiles and trucks converging on a single neighborhood with all the detailed planning of an army maneuver. It *was* an army maneuver, of a special sort. It was an army of public service, mobilized in a carefully planned campaign for systematic changing over of stoves, heaters, and other appliances in every home in the city of Washington and suburban areas, so as to permit the use of 100 per cent natural gas in place of the mixed supply previously served.

EACH truck had its time of arrival at a given point carefully worked out. Swarms of employees went through homes and apartment houses on a timetable schedule which left nothing to chance or second guessing. Long before that a barrage of publicity kept the public in each local precinct posted on time for "C" day when Operations Change-over would occur in their respective localities.

So successful was this tremendous undertaking which occurred with a minimum of incident, accident, or expense that we arranged to have one of our professional writers of business articles, LARSTON D. FARRAR, interview responsible officials of the Washington Gas Light Company. The result is the blow-by-blow description which MR. FARRAR has developed into a complete article, beginning on page 467.

IN view of the fact that so many other large American cities face a repetition of this delicate operation in the near future, as natural gas reaches communities previously unserved by it, we know gas men and others will find profit and interest in this story of the Washington changeover—an epic of its kind. It is possible that this company's experience can be used as a model in other cities.

OCT. 7, 1948



JAMES H. COLLINS

THE question of gas storage is receiving more and more attention as the peak demand for service in some areas exceeds the ability of the industry to cope with the problem of immediate pipe-line construction capacity in a market short of steel pipe. Recent decisions of the Federal Power Commission involving the supply of natural gas in the Middle West emphasize the need for storage capacity to build up reserves at or near distribution points prior to seasonal peak demands.

IN this issue D. V. MEILLER, senior design engineer of the Public Service Company of Northern Illinois, gives us an account of a novel improvement of gas storage technique. His article, beginning on page 481, is a challenge to many engineers who are active in development work.

* * * *

ANOTHER piece by a professional writer of business articles, done at our request, is the story by JAMES H. COLLINS (beginning page 486) on the use of the movie camera on one of the big construction jobs in California.

THE next number of this magazine will be out October 21st.

The Editors



What are "Controllable Costs"?

Controllable costs are potential profits. They are dollars that could hit the happy side of the balance sheet except for waste and inefficiency.

"Controllable Costs" is also a very pertinent title for record systems grown old and antiquated.

For years, the Gas Industry's operating systems have been expedited by some of the finest record systems and accounting methods ever devised for public utilities. Working with Gas executives, Remington Rand — world's largest researcher and producer of business systems — designed the basic control methods that have touched almost every activity of the Gas Industry.

With these systems and methods went Remington Rand equipment...tabulating and calculating machines, typewriters, indexing systems, fire-resistant files and safes, bookkeeping machines, and Kardex, the signalled visible record system.

Together, the Gas Industry and Remington Rand provided methods that cut deep into the cancer of "uncontrolled" costs. Today, with the profit-spread squeezed to its minimum margin, we are again searching beneath the surface for the untapped profit resources found in Controllable Costs.



Coming in the...



NEXT ISSUE

WHO OWNS THE AMERICAN TELEPHONE AND TELEGRAPH COMPANY?

Critics of large corporate enterprise frequently stress the argument that the so-called "corporate fiction" is merely a façade masking the concentration of economic power in the hands of vested interest. AT&T is the biggest corporation of them all. What do its records of shareholders show as to the distribution of ownership in terms of voting stock? C. S. Van Cise, assistant treasurer of the AT&T, has given us a careful and thorough analysis of the distribution of common shares in the world's largest single corporation. It utterly demolishes the fallacy that AT&T is controlled or ever could be controlled by any single interest or combination of special interests. It shows, on the contrary, that the very vast scope of share distribution constitutes in itself a practical example of industrial democracy.

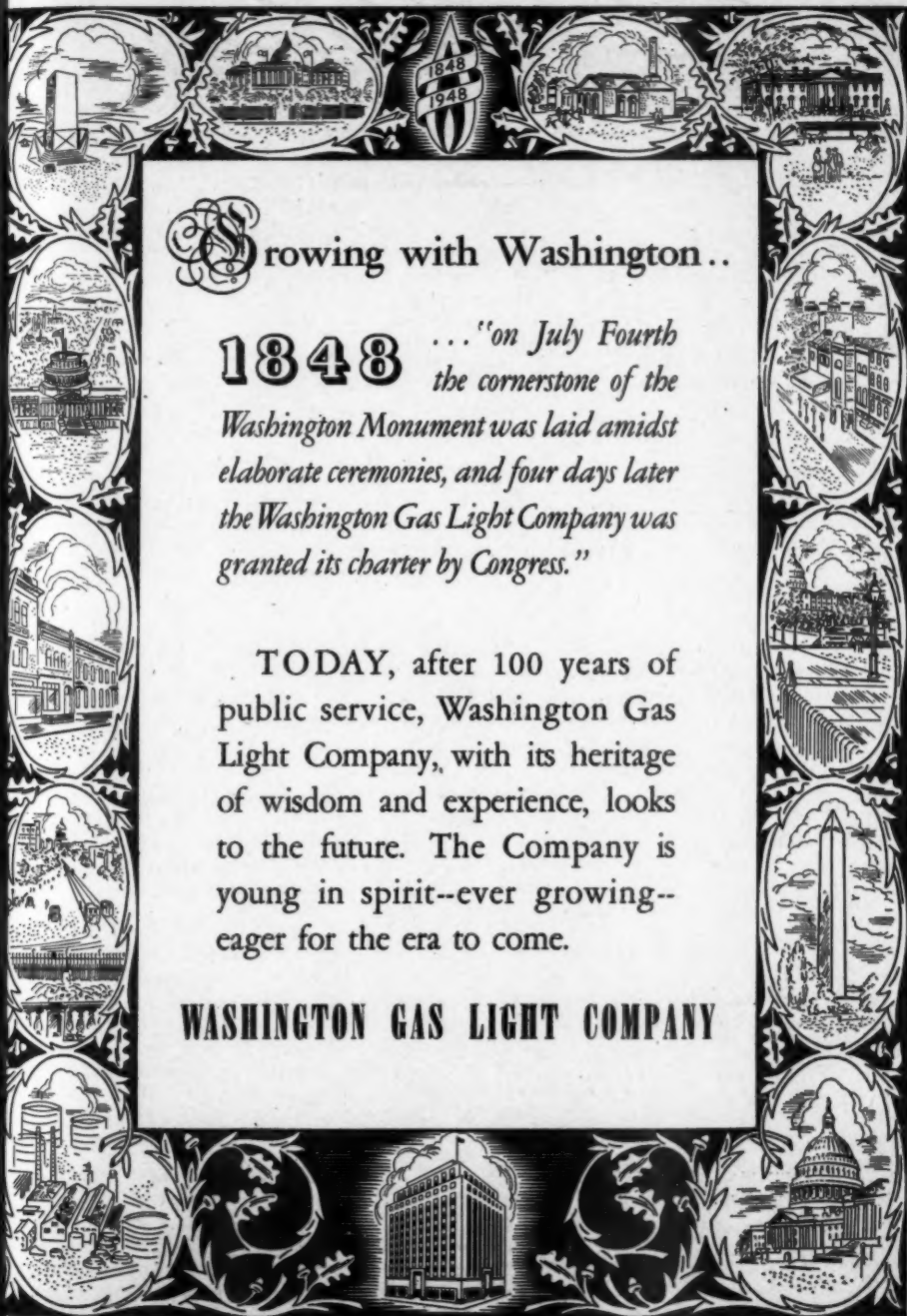
DIVIDENDS—THE KEY TO VALUE

When utility management is faced with the problem of raising new funds for plant expansion or replacement during a period of uncertain earning power due to rising costs, the conservative and orthodox tendency is to adopt an extra cautious dividend policy. This is based on the theory that if earnings are once distributed in dividends, management could not be certain of getting the use of such funds back, through new financing, under such circumstances. Now comes W. F. Stanley, vice president of Southwestern Public Service Company of Dallas, Texas, with a challenging critique of this conventional attitude as defeating its own purpose. His article gives thought-provoking reasons why a contrary or liberal dividend policy is indicated, in such a situation, in order to benefit both investor and management and, eventually, the consumer who stands to gain in the end from stable, sound, and balanced utility financial structures.

THE RECENT RISE IN RATES FOR GAS AND ELECTRICITY

Federal Power Commission periodically issues comparative data on electric rates of various cities throughout the United States in terms of typical bills. But such information does not always convey the exact degree of price changes for utility services in terms of actual cost to the consumer, including local taxes, etc. Marion Hammett, former economist for the U. S. Bureau of Labor Statistics, has written for us a clear and brief analysis of both gas and electric utility price changes through 1947.

Also . . . Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.



Growing with Washington..

1848 ... "on July Fourth the cornerstone of the Washington Monument was laid amidst elaborate ceremonies, and four days later the Washington Gas Light Company was granted its charter by Congress."

TODAY, after 100 years of public service, Washington Gas Light Company, with its heritage of wisdom and experience, looks to the future. The Company is young in spirit--ever growing--eager for the era to come.

WASHINGTON GAS LIGHT COMPANY

Remarkable Remarks

"There never was in the world two opinions alike."

—MONTAIGNE

CHARLES O. HARDY
*Staff director, Joint Committee
on the Economic Report.*

"There is great danger that we shall lose our faith in the institutions that have made America great, and rush to the nostrums developed in the decaying civilizations of the old world."

C. WAYLAND BROOKS
U. S. Senator from Illinois.

"It is not good business to destroy private enterprises if the government can cooperate. They provide the taxes that keep the government operating. We should be very jealous to preserve private industries."

HARRY H. HEIMANN
*Executive manager, National
Association of Credit Men.*

"Time and again it has been demonstrated that size of organization is no criterion of the ethics of its operations. And the record proves that, if a business grows, its policies must be sound to facilitate its expansion."

L. C. HART
*Vice president for relationships,
Johns-Manville Company.*

"Selling is serving. And selling is teaching—of the highest order—because it teaches people how to enjoy greater happiness, to live more comfortably, to do things more easily and economically, and to improve themselves."

JOHN J. QUINN
*Vice president, Boston
Consolidated Gas Company.*

"No activity of the company should ever be closed to the advertising manager. He or she should be advised on all company management policies, plans, procedures, and results. His opinion and advice should be solicited and thoughtfully considered before policy changes are decided upon."

CLARENCE FRANCIS
*Chairman, General Foods
Corporation.*

"I am not ashamed to predict to you that the next age of business leadership will belong to those who count their success in terms of the greatest possible service to the greatest number of people. I say that the human problems of industry are the big problems and that they will not yield to techniques alone—important as these may be."

EDITORIAL STATEMENT
The (New York) Sun.

"There is only one enduring foundation of American prosperity—it is continuous investment of money in new patents by persons who hope for its future. Without such investment there never could have come into being our railroad system, motor cars, airplanes, radio, steamships, factory machinery, office appliances, household gadgets, even the very houses in which we live."

**TOMORROW
IS ALWAYS
TODAY**



Today we are busy.

We can't wait until tomorrow.

**For tomorrow thousands of new homes and industries
will want gas service. Today is the time
for us to prepare for this increased demand.**

Tomorrow will be too late.

**The United Gas Improvement Company and its subsidiaries
provide a great part of the gas service in southeastern
Pennsylvania. It operates the municipal gas works of the
city of Philadelphia—the largest of its kind in the country.**

**We extend greetings to the American Gas Association
at its convention in Atlantic City, October 4-8.**

THE UNITED GAS IMPROVEMENT COMPANY

Philadelphia, Pennsylvania

THOMAS R. REID
Vice president, McCormick
& Company.

"Management's greatest job today is to make friends with people as employees and as the public."

ROBERT NEWCOMB
President, Newcomb & Sammons.

"Any industrial relations man knows that a contented employee is the best advertiser a company can have."

K. T. KELLER
President, Chrysler Corporation.

"The impact of taxes has grown great enough to force its way indirectly into virtually every business decision."

RALPH HENDERSHOT
Financial editor, New York
World-Telegram.

"Government planning is a close neighbor of dictatorship. It is something a nation indulges in as almost a last resort."

FRANCIS ADAMS TRUSLOW
President, New York Curb
Exchange.

"We should speak out boldly, not in defense, but in commendation of the speculative motive—of the willingness to risk capital."

EDITORIAL STATEMENT
The Wall Street Journal.

"By Americans out of sympathy with American traditions the world has been taught to look upon this country as a fat, blundering idiot."

NEIL CAROTHERS
Dean, School of Business
Administration, Lehigh University.

"No government has ever been able to prevent industry, agriculture, and labor from taking advantage of prosperity and forcing it into a bloated boom condition."

EDITORIAL STATEMENT
Chicago Journal of Commerce.

"... you cannot install a rigid mainspring in a watch and then expect it to work. Similarly, you cannot dictate rigidity in one aspect of a business and expect the business to function with its accustomed smoothness."

LAWRENCE FERTIG
Writer on economic affairs.

"Many people today overlook the fact that the same inflationary factors which affect the individual also affect corporations. The dollars which each of them takes in today are inflated dollars. Each dollar is worth only about 60 cents if judged by 1935-1939 standards. The reason for all this inflation, of course, is the increased money supply caused mainly by war financing. Today our money supply is about three times what it was before the war."

EVANS CLARK
Executive director, Twentieth
Century Fund.

"The overriding development of the year, of course, was the ominous deepening of the differences between the East and the West—at bottom due to the antithesis in their economic way of life. These differences raised grave and urgent problems for American diplomacy, both political and economic. But they also urgently call for a heightened understanding by the American people of their own economic system—a knowledge of how it works, and of its sensational achievements in spite of its obvious shortcomings."



Our Front Door...

It opens wide on courtesy and the best of service to the people of the city of Saint Louis and Saint Louis County.

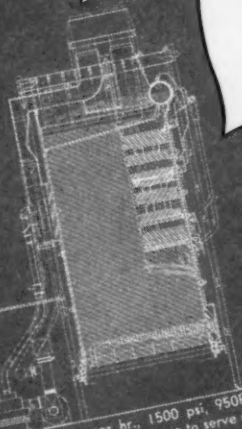
Year after year the magic blue flame — GAS — has played a more important role in the home, in industry, and it is our wish that more and more people will become aware of its dependability, its cleanliness, its flexibility, its economy, today and the years to follow.

Laclede Gas
COMPANY
SAINT LOUIS

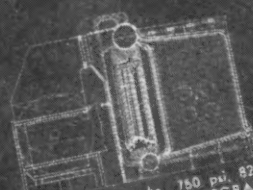
Serving
MODERN
Central Stations

with

STEAM
that Satisfies



Four 220,000 lb. per hr., 1500 psi, 950F RADIANT BOILERS of this type to serve a western public power company.



275,000 lb. per hr., 750 psi, 825 Foil-fired TYPE FH INTEGRAL-FURNACE BOILER with flat floor for a southwestern central station.



175,000 lb. per hr., 725 psi, 835F TYPE FH INTEGRAL-FURNACE BOILER for outdoor installation at midwestern central station.



300,000 lb. per hr., 336 psi, 600F STIRLING BOILER for midwestern central station.



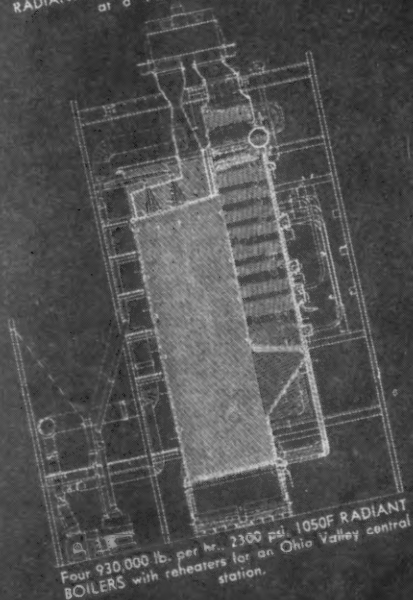
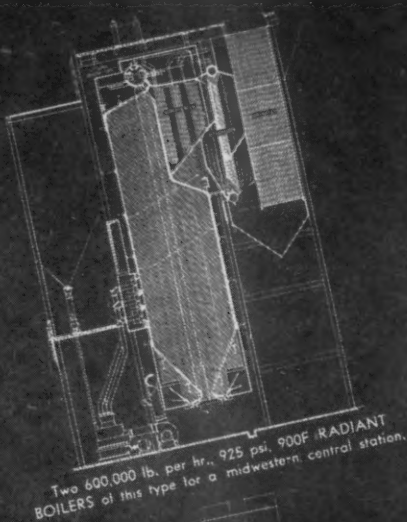
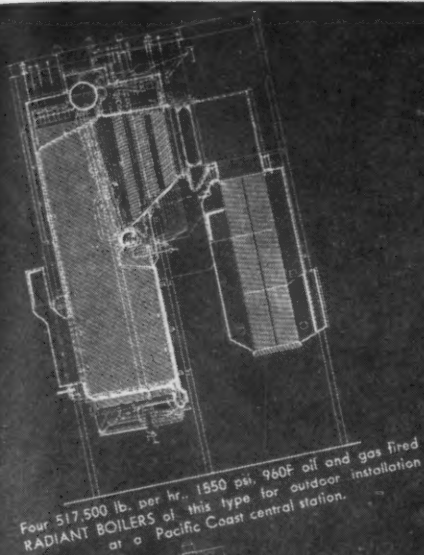
Two 425,000 lb. per hr., 1500 psi, 955F RADIANT BOILERS of this type for a southern central station.

FOR POWER PLANTS — B&W, Open-Pass, Radiant, Integral-Furnace, Cross-Drum, Stirling and Waste-Heat Stationary Boilers . . . Air-Multifuel Burners . . . Chain-Grate Stokers . . . Stacks and Breachings . . . Seamless & Welded Tubes for All Pressure and Mechanical Applications

Heaters
Applications

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General Offices: 85 Liberty St., New York 6, N. Y.
Works: Alliance and Barberton, O.; Augusta, Ga.

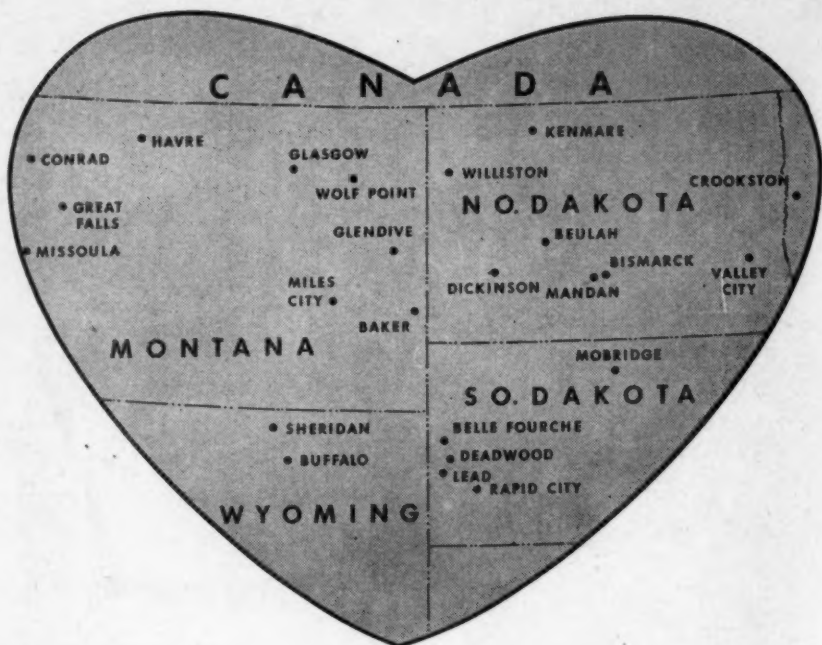
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Heaters . . . Economizers . . . Superheaters . . . Water-Cooled Furnaces . . . Oil, Gas & Applications . . . Refractories . . . Chemical Recovery Units . . . Alloy Castings.

OTHER B&W PRODUCTS—Marine Boilers . . . Pressure Vessels . . . Process Equipment.

BABCOCK & WILCOX

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**GROWING WITH A
GREAT AREA IN THE
HEART OF THE WEST**



MONTANA-DAKOTA UTILITIES CO.

"IN THE COMMUNITY TO SERVE"

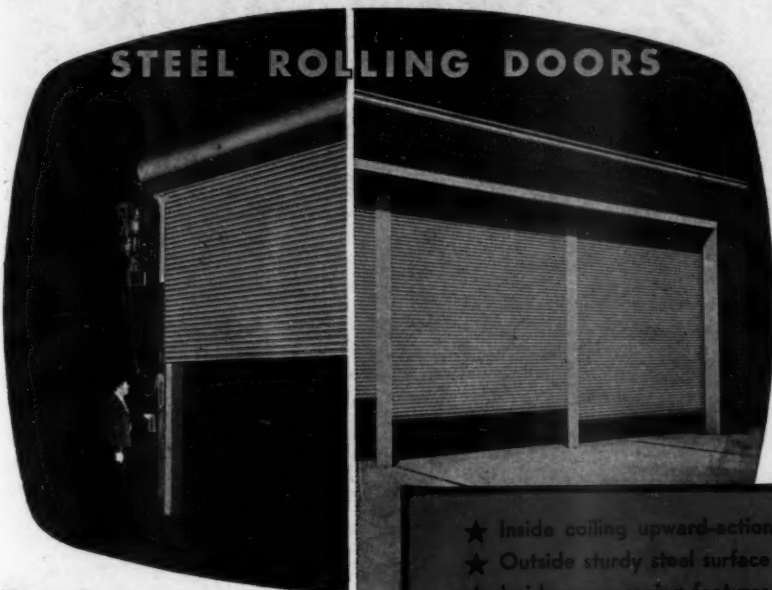
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Look at *Both Sides* for extra advantages of **KINNEAR**

STEEL ROLLING DOORS



WHEN you're deciding on doors, consider the many advantages on *both sides* of Kinnear Steel Rolling Doors. Inside and outside, you have full use of all wall and floor space at doorways. The interlocking-slat steel curtain rises straight upward; opens and shuts smoothly and easily. It coils in a compact roll above the doorway, completely out of the way; out of reach of wind or vehicle damage.

These rugged Kinnear Rolling Doors give long-time, low-maintenance service. When shut, they form all-metal barriers against fire, storm, theft, and intrusion. They are individually engineered to fit any size opening in new or old structures.

THE KINNEAR MANUFACTURING CO.

FACTORIES—2060-80 Fields Ave., Columbus 16, Ohio;
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in Principal Cities

Saving Ways in Doorways

KINNEAR

ROLLING DOORS

For fullest operating ease and time-saving convenience, add instant-acting Kinnear Motor Operators and push-button controls. They reduce heating and air-conditioning costs by preventing prompt door closure, and extend plant efficiency right up to the doors. Write today for details.

- ★ Inside coiling upward-action
- ★ Outside sturdy steel surface
- ★ Inside space-saving features
- ★ Outside unobstructed opening
- ★ Inside easy-to-reach control
- ★ Outside attractive appearance

Remote control by push-button from any point saves you time, stops, effort.



Husky KINNEAR Motor Operator lifts, lowers, stops door electrically.

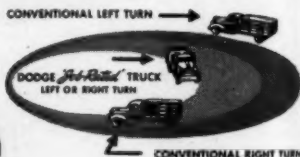
Only Dodge Builds *"Job-Rated"* Trucks

You'll save money with a truck that's built to *fit* your job. A truck that's too big, will waste gas and oil. Or, if it's too small it won't stand up . . . maintenance costs will be excessive. Dodge *"Job-Rated"* trucks save valuable time, too, simply by keeping out of the repair shop. They save time, because each truck is engineered with

exactly the *right* one of 7 different truck engines . . . the right chassis units throughout to haul a specific load, over specific roads, with time-saving efficiency. And naturally, a truck that fits the job . . . *lasts longer!* Ask your Dodge dealer to show you the *right "Job-Rated"* truck to fit your job . . . save you money!

You'll profit from these NEW features, too!

New "cross-steering," with shorter wheelbases that accommodate full-size bodies, enables you to turn in *much smaller circles*. You can park, back into alleys or up to loading platforms with



much greater ease. Front axles have been moved back and engines forward. More of the load is on the front axle . . . giving *much* better weight distribution. Combined with wider tread axles, longer springs, and "Air-O-Ride" seats you get a marvelous new "cushioned ride."



For the location of the Dodge dealer in your community, consult the yellow pages of your local telephone directory.

Visit the Big Dodge "Job-Rated" Truck and Equipment Show, Madison Square Garden, New York City, November 18-21, 1948

DODGE *"Job-Rated"* TRUCKS

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When we say

100 YEARS AGO



... we are thinking of Peter Donahue, who, with his San Francisco Gas Light Company, fathered the gas industry in California in the early fifties.

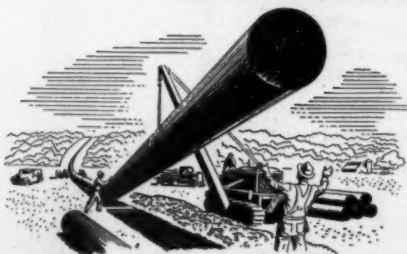
1854—on February 11th of that year, the birth

of the gas industry in the State was celebrated at a banquet featuring the lighting of gas lamps in the Occidental Hotel in San Francisco.



Peter Donahue's pioneer enterprise began operations with 12 miles of gas mains backed by a capacity of 160,000 cubic feet of gas manufactured from Australian coal.

TODAY



— P. G. and E., whose illustrious predecessor was Peter Donahue's company, is constantly improving its service to nearly 900,000 customers through a network of more than 10,000 miles of gas lines capable of delivering a maximum send-out in excess of 742,000,000 cubic feet per day.

P.G. and E. PACIFIC GAS AND ELECTRIC COMPANY

**NO MATTER HOW LONG
OR HOW SHORT YOUR
TRENCHING JOB...**

**You'll do it Quicker—
You'll do it Cheaper—**

WITH A CLEVELAND

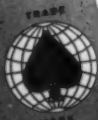
Originally designed right and built right, CLEVELANDS apply the most advanced engineering principles in a practical way to today's trenching jobs, long or short, tough or normal.

Extremely compact and mounted on wide full-crawler tracks, CLEVELANDS are exceptionally flexible and easy to handle. Weight is carried low for stability when working in rough places and over uneven ground.

A wide range of transmission-controlled speed combinations makes for fast completion of the trench—and there's abundant power correctly applied for digging in all types of soil.

Unit-type construction from the finer, tougher steels assures CLEVELAND owners minimum maintenance and quick, easy field repairs. Low fuel consumption cuts operating costs to a low level.

From every angle CLEVELANDS are a fine investment, for they'll save time and increase profit on your work.



THE CLEVELAND TRENCHER CO.

30150 ST. CLAIR AVENUE

CLEVELAND 17, OHIO

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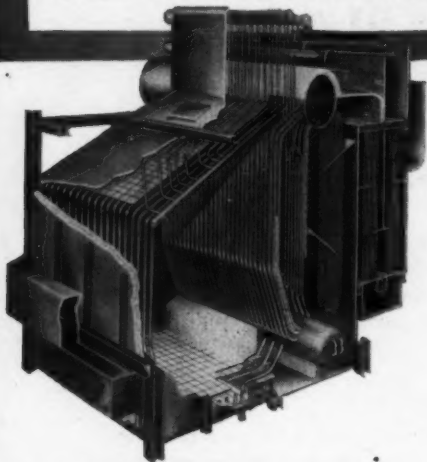
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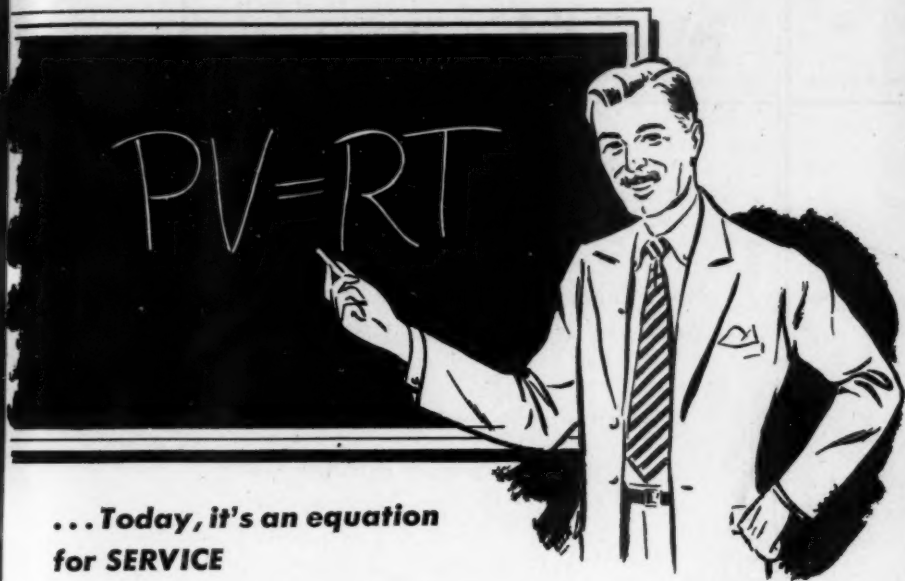
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1. The " T " value would of necessity rise (Mr. Customer's "*Temperature*" would be at a happy level).
2. The " R " factor would approach zero

(Mr. Customer's "*Resentment*" would quickly fade away).

So, $PV=RT$ is more meaningful than ever to us of the gas industry, now, as we work to solve the problems of "serving up" more and more gas at desirable pressures—to *better serve* Mr. Customer by steadily boosting *our* side of the equation.

May we voice a tribute to the American Gas Association whose members, under the most difficult circumstances, have remained true to the ideal of successful utility operation under the American system of free enterprise, and who have constantly striven to provide adequate distribution of gas and to improve gas *service*.

We are proud to be a member of this association.

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The AGA deserves our compliments for the successful fulfillment of its Number One objective: "to promote and develop the Gas Industry and to coordinate its activities to the end that it may serve to the fullest possible extent the best interests of the public."

We extend a hearty welcome to all those who attend the Convention, which we sincerely hope will be the finest in the history of the Association.

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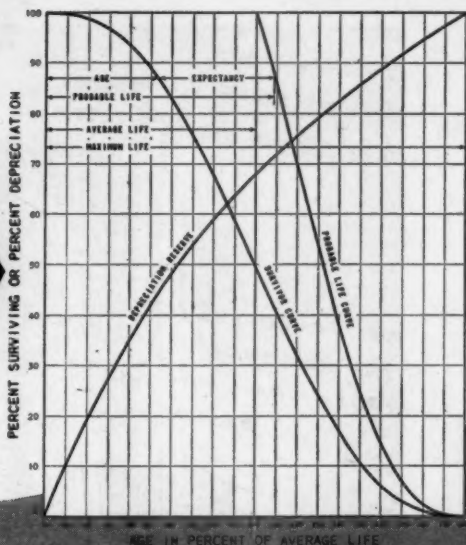
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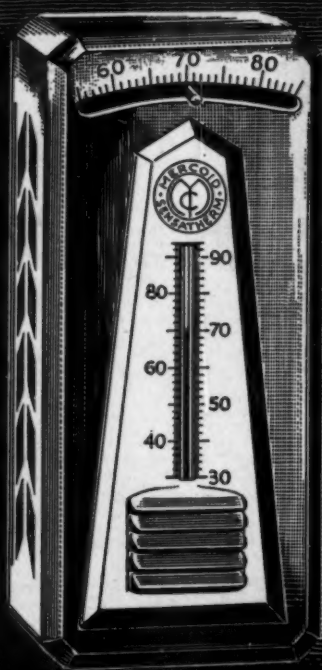
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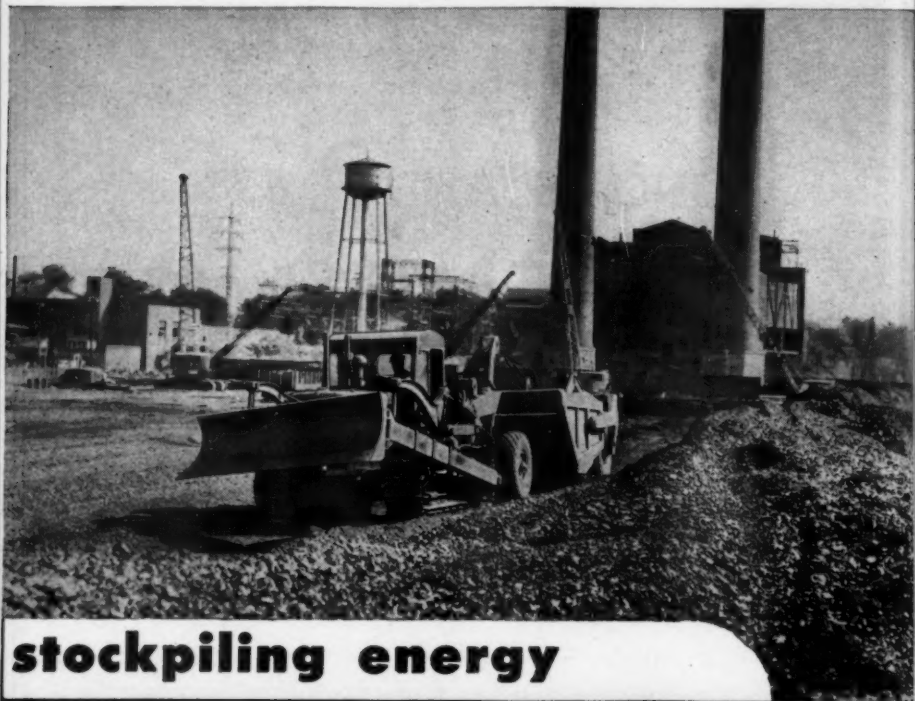
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Utilities Almanack



OCTOBER



7	T ^h	¶ <i>Pennsylvania Electric Association, Transmission and Distribution Committee, begins meeting, Bedford, Pa., 1948.</i>
8	F	¶ <i>American Water Works Association, Ohio Section, ends annual meeting, Mansfield, Ohio, 1948.</i>
9	S ^a	¶ <i>Mississippi Broadcasters Association begins meeting, Biloxi, Miss., 1948.</i> ☺
10	S	¶ <i>American Water Works Association, Southwest Section, begins annual meeting, Galveston, Tex., 1948.</i>
11	M	¶ <i>United States Independent Telephone Association begins annual convention, Chicago, Ill., 1948.</i>
12	T ^u	¶ <i>Edison Electric Institute, Transmission and Distribution Committee, ends meeting, Swampscott, Mass., 1948.</i>
13	W	¶ <i>Indiana Electric Association begins annual convention, French Lick, Ind., 1948.</i>
14	T ^h	¶ <i>Texas Mid-Continent Oil and Gas Association begins annual meeting, Fort Worth, Tex., 1948.</i>
15	F	¶ <i>Utility Workers Union of America begins national convention, Washington, D. C., 1948.</i>
16	S ^a	¶ <i>Electrochemical Society ends fall congress, New York, N. Y., 1948.</i>
17	S	¶ <i>Independent Natural Gas Association will hold annual meeting, Tulsa, Okla., Oct. 26, 1948.</i> ☺
18	M	¶ <i>American Institute of Electrical Engineers begins Midwest meeting, Milwaukee, Wis., 1948.</i>
19	T ^u	¶ <i>First Advertising Agency Group begins annual convention, Ponte Vedra, Fla., 1948.</i>
20	W	¶ <i>South Dakota Telephone Association begins annual convention, Sioux Falls, S. D., 1948.</i>

Controlling the Flow into City Gas M

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Public Utilities

FORTNIGHTLY

Vol. XLII, No. 8



OCTOBER 7, 1948

What the AGA Convention Hopes to Accomplish

In Atlantic City, New Jersey, from October 4th to 8th, the American Gas Association holds its thirtieth annual convention. Here is a special message from the chief executive of that great utility industrial organization, giving us briefly a general concept as to the scope, function, and major objectives of this particular annual conclave of the gas utility industry during one of the most critical periods in the history of the industry and of the nation.

By HUDSON W. REED*

PRESIDENT, AMERICAN GAS ASSOCIATION

THE thirtieth annual convention of the American Gas Association will cause the nation's spotlight to be thrown upon a scene which is peculiarly characteristic of the American business world. That spotlight will reveal in all its vast implications the deliberations of a great industry. It will serve again as an object lesson for all

to see how businesses operating in a free economy pool their knowledge for the common good and seek out the best minds to throw light on their problems.

The deliberations of this year's meeting are particularly significant and the 10,000 people who are expected to attend will receive an insight into the most advanced thinking on some of the most compelling national problems. Standing at the peak of its service to

*Mr. Reed is also president of the Philadelphia Gas Works Company.

PUBLIC UTILITIES FORTNIGHTLY

the country, with more than 21,000,000 customers, the gas industry is contending with a rapidly expanding economy that requires serious consideration of many problems that affect its rightful position in its field of industry.

Beset with material shortages, notably steel, and besieged with demands for service which it cannot completely satisfy, broad-gauged public relations problems which confront the industry are high on the agenda of the convention. The prodigious efforts to increase the gas supply will be reviewed. Experts from regulatory bodies and business will discuss the financial aspects of the expansion which is going on at an unprecedented pace.

THE penetration of natural gas into many new markets and its increasing utilization in manufactured gas areas will receive special attention. One constructive trend to be assayed is the increasing unity of these two branches of the industry. No longer do manufactured and natural gas men approach their problems from separate viewpoints. Their futures are so bound up in the changing patterns of the nation's natural resources and technological developments that there is a growing realization of their interdependence.

Synthetic fuels are looming larger on the national horizon and their potentialities will be discussed at Atlantic City. There will also be reports on the immediate and long-term supplies of coal, oil, and coke.

Sales promotion, advertising, and

research—the triple-threat backfield of the association's forward-looking PAR plan—will hold paramount attention. Encompassing integrated and coordinated national sales programs, backed up by ever-increasing research, this plan is credited, to a considerable extent, with the revitalizing of the entire gas industry.

ASPECTACULAR exhibition of modern gas appliances—the largest ever held—will be a special feature and serve to demonstrate the striking progress in gas appliance design and performance. Here will be shown the many automatic features in appliances using gas, a fuel available for both heat and refrigeration. The outlook for increasing quantities of these modern appliances will be the principal subject of a spokesman for the manufacturing industry. A special effort has been made to attract dealers to the convention and two meetings are directed to them exclusively.

Labor relations, accident prevention, conservation, and other timely topics will be reviewed by authoritative speakers. Accounting, residential, commercial and industrial sales, and technical operating meetings will focus attention on the most advanced policies, methods, and ideas.

In short, a panorama of the resources and accomplishments of the five billion dollar gas industry will be on display. It will serve as an inspiration to the industry to maintain and improve its position in the vanguard of public service.

For time-table outline of AGA convention program, see page 485.



A Well-planned Service Changeover to Natural Gas

Right in the nation's capital there has just been successfully completed a changeover of gas utility service from "mixed" to all natural gas supply. Because of the magnitude of this problem and the fact that many other gas companies face similar operations in the near future, this play-by-play description of the Washington Gas Light Company's experience may well be of interest and of profit to many others in the gas utility industry.

By LARSTON D. FARRAR*

WHENEVER gas company executives gather these days—to "talk shop"—one subject is almost bound to come up for discussion before they adjourn. That is the problem of changing over from manufactured or "mixed" gas to all natural gas supply. This is no isolated problem. On the contrary it is one which dozens of the major city gas companies face sometime within the next decade—as the pipe-line companies progress with their plans for new and bigger and longer lines from the southeastern and southwestern gas fields to the industrial centers of the Middle West and Atlantic seaboard.

The reasons why these gas companies, presently operating on manufac-

tured or "mixed" supply, are likely to consider the switch to natural gas, as not only desirable but inevitable, are apt to be about the same reasons which impelled the Washington Gas Light Company to come to such a decision in 1946—after considering the matter and exploring all reasonably possible alternatives for some months. These reasons included mainly: A rapid growth in metropolitan service area for consumer demand; engineering, construction, and financial investment difficulties in obtaining adequate new plant to meet such service responsibilities with the existing gas supply methods; the need for more efficient utilization of distribution facilities already in operation.

But even after the arrangements have been made for securing natural

*Professional writer of business articles, Washington, D. C.

PUBLIC UTILITIES FORTNIGHTLY

gas supply, the problem of changing over hundreds of thousands of meters within a short time without jeopardizing the safety and welfare of the community is truly a staggering challenge to the planning and managerial ability of any gas utility company.

IT is for this reason that the record made by the Washington Gas Light Company in its recent conversion of some 240,000 meters in the Washington, D. C., area from mixed gas to natural gas *without a single fatality or serious incident*, is an experience and a lesson which is worthy of discussion whenever our shop-talking gas utilities bring up the subject of changeover. Not only was this conversion of the Washington service area, with a population of over one million and a quarter, accomplished without serious accident, it was also completed with less than \$50,000 worth of claims for both injuries and damages. Only about a dozen small damage suits have resulted. That, as any experienced damage lawyer or claim agent would agree—considering the gigantic and delicate change-over operation involved—comes about as close to perfection as any gas company is likely to come in an imperfect world.

But it didn't just happen that way and it wasn't all luck—even though company officials cheerfully and modestly admit that they did have plenty of breaks. The element of luck, good or bad, is always unavoidably present in such a situation. Yet, if we bear in mind Knute Rockne's famous football comment that "a good team makes its own breaks," the advanced planning and organization that went into the Washington changeover speak volumes for

the "team." The team in this instance was headed by Marcy L. Sperry, president of the Washington Gas Light Company. Suffice it to say, at the outset, that the risk involved was tremendous.

POOPLY handled, with the multiplicity of mishaps, the company could have suffered serious, possibly irreparable damage—not only financially, but in long-time public relations. At the worst, the standing of the gas utility industry, as a whole, might have received some injury from a badly bungled job of conversion.

And, so, the company's "campaign"—for it was in many respects like a well-planned military campaign—had to begin far in advance of the actual changeover. One of the first steps, for example, was to convert the thinking of Washington area residents from cubic measurement of gas to the heating quality of gas—which is so necessary in obtaining public good will and understanding in the acceptance of all natural gas supply. This was done by changing over billing from cubic feet rates to thermal rates while the company was still on a "mixed" gas supply basis. It was done without incurring the wrath of a single consumer. The next step called for coordinating the different company departments—because, obviously, such a major changeover is more than a job for one or two departments. Every department has its part to play.

Management's job is to see that every employee correlates his efforts in such a way that the public is served best with least friction. The bookkeeping division had to be ready with cards for the change-over workmen in the

A WELL-PLANNED SERVICE CHANGEOVER TO NATURAL GAS

field. The public relations division had to be far ahead of all others. The laboratory played a most vital part. The field men converting the appliances couldn't work until the men on the mains had done their job. Engineers, auditors, officials, workmen—all had a part in this drama that could easily have proved to be a flop but actually turned out to be a smash hit. Even such a "bit" player as a telephone operator could have spoiled almost any scene in this performance. But the "bit" players turned out to be as alert and as carefully rehearsed for their parts as the "stars" on the center of the stage.

"FROM where we sat shortly after VJ-Day, it was obvious that we had a decision of vital importance to make," Everett J. Boothby, vice president and general manager, recalled in a recent interview. "We had our estimates of growth, related to a program of residential building construction, of rather startling proportions. An estimated 50,000 new dwelling units were slated to be erected in the Washington area by 1950—five years from that time. That made a potential maximum day of perhaps 250,000,000 cubic feet of mixed gas by 1950 or 1951. But at that time—1945—we could deliver no more than 130,000,000 cubic feet per day.

"To continue as we were, on mixed

gas, would require immediately, not additions to plant, for our plants already were built up to their limits, but a new plant located somewhere well out in the fringes of our nonindustrial area, to be followed within a relatively few years, for transmission and geographic reasons, by a second new plant. We had our grave doubts about being able to complete one new plant, starting from scratch, not even having acquired the land on which to build it or the steel for transmission lines necessary to connect it with our existing distribution system, in time to meet the expected heavier load requirements."

A complete survey of all possibilities led the company executives to what they now call an "inevitable" conclusion—to change over entirely to the distribution of natural gas, with nearly double the British Thermal Units of heat, from the mixed gas they had been serving so long. They reasoned—correctly, it turned out—that high BTU natural gas would (1) eliminate the necessity for new plant investments, (2) minimize distribution capital outlays, (3) cut out some prospective increases in operating costs, and (4) through the higher BTU, increase the effective capacity of their existing distribution mains by about 83 per cent.

THIS decision was made on April 1, 1946—but it was not an April



Q "WHEN natural gas is admitted to a range properly adjusted for 600 BTU mixed gas and no changes in the appliance have been made, the top burners will produce a long, yellow flame. As a result, it is necessary to make the conversion as quickly as possible to keep down danger of fire, or accidents. Certain appliances can't be converted satisfactorily . . ."

PUBLIC UTILITIES FORTNIGHTLY

Fool jest, either to the company or its customers. In the following months, feverish planning and activity went into the preliminary campaign planned for the summer and fall conversion period in Virginia and Maryland, the two outlying areas, as a "warm-up" for the big Washington job to come.

As the company already was attached via a pipe line to natural gas (used in a great measure in its mixed gas), no particular problem was encountered in this respect. The natural gas purchased by the company comes from the eastern Kentucky and West Virginia fields through a 20-inch line from Boldman, Kentucky.

Since the changeover, the Washington Gas Light Company has abandoned manufacture at its west station facilities, but the east station still produces a high BTU gas for emergency use—in case of a curtailment, or interruption, of natural gas service, or to cut peak demands on the pipe line. This stand-by plant already has performed well, once during an emergency last winter when, with no notice, it had to be placed in operation for the first time at full capacity, in the shortest possible time. It had worked at other times on a limited basis when the pipe-line system ran a little shy on deliveries during peak cold periods.

By changing to natural gas, the company has added only about a 10 per cent load increase to the demand of the Atlantic Seaboard Corporation, which has been Washington Gas Light Company's source for natural gas since 1931.

Long before the company converted, it was using increasing quantities of natural gas each year. In fact, by the time of conversion, of every 100

BTU of gas sold, 90 BTU originated in natural gas. The old gas was natural gas reformed to 375 BTU and enriched to 600 BTU with cold natural gas. It usually was augmented by carbureted water gas on peak days.

The Differences in Gas Supply

THE new gas and the old had many differences. The old had a heat standard of only 600 BTU. The new has 1,100 BTU. There also were differences in chemical content and in burning characteristics. But each gas has the same specific gravity (.64), which made the problem of converting easier than it would have been otherwise, for reasons of gas flow and air injection. However, the increase in BTU content meant that with the same size orifice, the natural gas flow would admit about twice the number of heat units per hour to a burner as would be the case with the old gas. Consequently, the orifices in equipment designed for manufactured gas had to be reduced to obtain the same heat inputs. Also, the air shutter had to be adjusted to get the proper primary air injection.

The other principal factor which controls the adaptation of an appliance in order to convert it to the use of natural gas is that of ignition velocity, or rate of flame propagation. The rate of flame propagation of natural gas is considerably slower than that of the old mixed gas and, consequently, the flames tend to elongate and, in fact, actually lift from the burner ports. In order to counteract this lifting tendency, the ports of many burners had to be enlarged to reduce the port velocity of the gas-primary air mixture so that the flame settled back to the port opening.



Washington Reconversion Job

"... mentioning the 240,000 meters served by the company doesn't give an accurate picture of the size of the Washington reconversion job. . . . there are more than 1,250,000 persons in the area served by the Washington Gas Light Company system. Its customers have 700,000 appliances, with some 3,000,000 burners."

WHEN natural gas is admitted to a range properly adjusted for 600 BTU mixed gas and no changes in the appliance have been made, the top burners will produce a long, yellow flame. As a result, it is necessary to make the conversion as quickly as possible to keep down danger of fire, or accidents. Certain appliances can't be converted satisfactorily, in which case the complete burner and pilot assembly must be replaced.

Laboratory research of gas appliances indicated to the company that, generally, the following four major steps were necessary for conversion to natural gas:

1. Reduction of gas flow to pilots and main burners.
2. Enlargement of burner port areas.
3. Adjustment of air shutters.
4. Replacement of nonadaptable parts.

Just mentioning the 240,000 meters served by the company doesn't give an accurate picture of the size of the

Washington reconversion job. As already noted, there are more than 1,250,000 persons in the area served by the Washington Gas Light Company system. Its customers have 700,000 appliances, with some 3,000,000 burners.

In months of planning, preliminary to the change-over work, the company emphasized certain points in all staff conferences and employee meetings. These points were:

FIRST and foremost—safety.

SECOND, speed of changeover in specific districts so as to minimize both danger and inconvenience to customers.

THIRD, complete faithfulness to details so that *no one home* would be overlooked, and *no one person* would run the risk of any kind of accident.

FOURTH, public acceptance of the idea from beginning of the new type of billing until the last appliance had been converted, and general public satisfaction, as well as company satisfaction, after the job was done.

IF a saving interfered with safety, the matter of cost was not considered,

PUBLIC UTILITIES FORTNIGHTLY

company officials stress today. Of course, they made every effort to save on overtime and on every other cost phase of the project, but only in so far as such efficiency efforts could be considered against the over-all objective of a speedy, safe changeover, completed without causing an accident or making an enemy.

"Having arrived at the conclusion that we had better convert, the next step was to demonstrate to the three regulatory bodies that the general program we had developed was the best way to proceed," Mr. Boothby related. "We deal with three commissions—those of the District of Columbia, Maryland, and Virginia. Fortunately, we were able to present such a clear-cut case of need and responsibility that all three, after due public hearings, approved the plan. The various commissioners could understand readily, as we proved, that if we had not converted to natural gas, substantial rate increases would have been necessary. To keep us financially stable, we even felt—and convinced them—that no rate decrease was in order even if we did convert—although this position ran directly counter to the old idea that, of course, the introduction of straight natural gas must be accompanied by a decrease in rates.

"We persuaded the three commissions with open arguments that the many future uncertainties as to price and cost levels made it impossible for us to gaze into a crystal ball and determine more than a year in advance what the correct rate levels for natural gas to be sold at retail should be. With their approval, and well in advance of actually starting the physical conversion, we refiled our rate schedules as therm

rates instead of cubic foot rates—the new filing, or therm rates, being at the same price per therm as previously, with the idea of letting future earnings determine at the proper time what changes were indicated. Our therm rates have been in effect nearly two years now, with practically no difficulties, confusion, or questions asked by customers."

The Preliminary Phase

PRELIMINARY to the actual changeover, some 1,300 valves had to be installed in various parts of the main system of the company so that the introduction of natural gas, displacing mixed gas in each of the 256 districts into which the system was subdivided, could be under close control. It was planned for the crew of change-over workmen to work one district each day. But, due to the fact that the main system in some places antedates the Civil War, it was to be expected that there would be tie-ins not recorded on the plans (and errors in the pipe main records), all of which might result in natural gas showing up where least expected, or, on the other hand, not being where it was supposed to be. This happened in only 6 out of the more than 250 districts and, while several loomed up as serious at the time, the company officials view them as minor in retrospect.

"There was one case where tie-ins of mains as recorded in the drawings did not exist—with the result that the boys had a bear by the tail," Mr. Boothby said, smiling. "To carry through, instead of having one district on their hands that day, they wound up with two—2,500 changeovers to make instead of the normal 1,200."

A WELL-PLANNED SERVICE CHANGEOVER TO NATURAL GAS

That, of course, was awkward because the people in the second district had been informed that their appliances had been scheduled for some later date. "Can't-Get-Ins" were much higher. Needless to say, longer than ordinary hours were worked on days when these "main errors" were uncovered, but about the only result of consequence, besides overtime that had to be paid, was a claim for \$3.50 for a steak whose owners claimed they had to pan-fry instead of oven-broil, thus being a bit tougher to eat.

THE appliance change-over work in the company's Virginia area and the greater part of the Maryland area began on August 16, 1946, and continued through November 25, 1946, during which time some 20 per cent of the total changeover was completed. This first project went forward at the rate of 800 conversions a day.

As a result of the lessons learned in this project, the company was able to speed up its work the next year in the District of Columbia to a relatively terrific pace. The District changeover began on April 1, 1947, and continued through October 18, 1947, when it was completed. It was carried through with an average conversion rate of 1,200 a day, with the workmen going up to 2,000 conversions a day in some heavily populated apartment areas.

The procedure followed in actual change-over work consisted of four major functions, all in operation concurrently:

1. Distribution system—section segregation and purging.
2. Laboratory determination of special appliances.
3. Appliance adaptation or change-over.
4. Publicity and public relations.

During the project, an average of 550 men a day worked regular 10-hour days for six days each week. A regular working day began at 7 AM and usually ended around 5 PM, although there were variations among specific crews and on many days. Only a few lost-time accidents were sustained by workmen during the entire change-over period, the most serious being the case of an adjuster who was hit by an automobile and, as noted, no customer was injured in any respect, at least physically, during the changeover, although a few may have had their feelings hurt through misunderstanding what was going on.

THERE were some anxious moments, but on the whole the field work was accomplished with a minimum of upsetting incidents. The quick changeover of appliances, the company felt, avoided the potential annoyance and inconvenience to customers that would have resulted if several days



Q "THE appliance changeover work in the [Washington Gas Light] company's Virginia area and the greater part of the Maryland area began on August 16, 1946, and continued through November 25, 1946, during which time some 20 per cent of the total changeover was completed. This first project went forward at the rate of 800 conversions a day."

PUBLIC UTILITIES FORTNIGHTLY

had elapsed between the turn-on of natural gas and the completion of conversion adjustments. *Washington Gas Light Company appears to be the first gas company in the United States which has insisted on one-day conversions such as this, but its experience has indicated the additional planning and expense required is well worth the trouble.*

While the planning, engineering, training, and districting were handled by the company's own staff from beginning to end, the actual change-over work in the field was handled by a specialist organization in this work—Conversions & Surveys, Inc., of New York—to convert appliances. The efficiency of the work performed and the maintenance of the time schedule proved the soundness of the choice.

Howard B. Noyes, general superintendent of the company, was in general direct charge of the over-all project. Frank P. Lamb, a company engineer, was named coördinator between the company and the contractors—a kind of overseer to increase the liaison between the contracting parties in every possible way.

The first step was to assemble samples of all possible appliances and equipment for laboratory examination and testing to determine exactly what adaptations had to be made. It wasn't too easy to get samples of all the models and types of gas appliances in use in the large Washington area. But, on the whole, just about every possible kind of appliance was rounded up. From these models, the laboratory technicians made tests to determine just exactly what had to be done to each appliance to make it work best under the new conditions.

Inquiries to other gas companies which had undertaken similar conversions revealed that there was little similarity of procedure on identical burners. Therefore, the Washington Company's laboratories tested all appliances to get the standards which its contract crews had to follow.

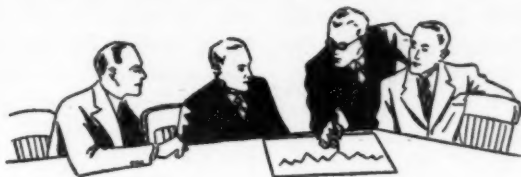
The Field Operation

THE second problem was to assemble the field men who would do the actual work. Conversions & Surveys, Inc., with its nucleus of men highly skilled in conversion work (although they learned a new trick or two in Washington!) knows men scattered over the country—specialists in such work—who are available on short notice. Since the independent contractor hired these men, the company was not faced with the task of "demobilizing" them at the end of the project. The responsibility for beginning and termination of such employment was taken over by the contractor, *not* the gas utility company.

After two weeks of training, the men were put into the field, two at a time with an experienced man, to get the "feel" of the work. After a few days, they worked "on their own" under a crew chief.

The typical field crew consisted of eight men, including one who served as both crew chief and inspector. Each man received three jobs at a time, and additional assignments from the inspector as the jobs were completed. Every job was checked by a supervisor.

The "regular" crews converted only household ranges and water heaters. Separate crews handled conversions on house-heating units, refrigerators, and commercial installations. For conven-



Average Conversion Rate

"THE District changeover [to natural gas] began on April 1, 1947, and continued through October 18, 1947, when it was completed. It was carried through with an average conversion rate of 1,200 a day, with the workmen going up to 2,000 conversions a day in some heavily populated apartment areas."

ience, work order forms were produced on the same type of paper used for the utility company's bills. Each order was filled in with the regular addressograph billing plate, being prepared in groups according to the various prearranged districts. The basic form was entitled, "Conversion Order and Record." The left-hand stub remained in the office, as a check, until the form was completed and returned. The right-hand stub was filled in by the field man with the meter number and a "picture" of the meter reading. When returned, it went to the accounting department so that proper billing records could be maintained.

THE central portion of the form included space for correct notation of all work, as well as a survey of all gas and competitive equipment in the home or place of business. These forms eventually found their way to the sales department and provided a comprehensive basis for intelligent and well-directed sales work.

The field man's first duty was to check whether "Order Issued" was written in the "Refrigerator" space, and whether there was a similar notation for house heating. If gas-fired equipment was used in either case and not noted on the conversion order, the field man reported it to his inspector immediately so that the proper form could be issued.

The refrigerator and house-heating conversion orders similarly were arranged, with an office control stub and spaces for an exact description of work done and an analysis of the installation. Every work order was signed both by the field man (adjuster) who did the actual work, and his inspector, so that complete check-back control was possible. In instances when it was observed that the same type of complaint traced back to the same adjuster more than once, he was given more training.

Daily work sheets produced by Conversions & Surveys, Inc., revealed the exact location of each crew chief, and where his automobile was to be parked.

PUBLIC UTILITIES FORTNIGHTLY

A large red-letter sign reading "Natural Gas" identified the car and helped field supervisors to locate it. This inspector's car was headquarters for the crew and also a portable supply depot.

A MOBILE shop unit was parked each day at a central location in the district being converted. It served as headquarters for field operations. It had 60 bins, containing various kinds of appliance change-over parts and was equipped with power tools for the repair of broken parts and the adaptation of burners which could not be converted satisfactorily on the premises of the customers.

The unit had a power take-off which drove one DC and one AC generator. The DC generator provided energy for electric welding, while the AC unit was the source for lighting, two drill presses, and grinders. Oxyacetylene welding also was standard equipment. The truck contained a 35-watt short-wave radio transmitter and receiver, operating on the company's assigned radio frequency. Thus, the crew was able to obtain and handle service calls dispatched from the central office promptly.

The average field adjuster required about forty-five minutes to convert a range. Thirty minutes was found adequate to adapt a refrigerator to natural gas, while automatic water heaters and house heaters usually required more time, depending upon the make and type of the appliance. *In literally hundreds of instances, the burners were found to be damaged and in need of repair. The damage was pointed out to the customer and the burner taken to the shop truck for repair. A claim check was given to the customer for*

any part thus removed and, as a matter of policy, no charge was made.

THE field men carried a supply of other signs—a white "Don't Defrost" notice for refrigerators which had been preadjusted before natural gas was introduced; a red "Do Not Use" tag for use when a part had been removed from an appliance, or when a specialist adjuster was slated to come in to take care of the implement. A large pink tag was a notice of an unsafe condition—unvented water heaters, for instance. The stub of this tag was returned to the office for follow-up by the company. If someone was at home, the field man explained the situation in detail and obtained the customer's signature for the stub.

Of course, the biggest challenge on conversion faced the company in the public relations field. Operating as it does at the seat of the American government and among one of the most "consumer-minded" populations in the nation, the company recognized that the changeover, from the time new billing was inaugurated down to the last appliance boring, *could* cause trouble. This realization, plus its own emphasis on safety, caused the company to give an extra amount of attention to informational aspects of the changeover program, for, if even one home had been overlooked, the situation might have become explosive in more ways than one.

The Public Relations Phase

THE whole changeover cost \$4,000,000—about \$16 per meter. The job could have been done for less money—and much less effectively and satisfactorily. But the company chose

A WELL-PLANNED SERVICE CHANGEOVER TO NATURAL GAS

to take no chances. It used a program of blanketing its customers with notices and then being doubly sure by placing newspaper ads that only an illiterate person could have missed. This public relations program has become a pattern for change-over public relations throughout the industry.

The public relations program had three aspects—first, relating to consumers in the affected areas; second, relating to company employees; and, third, relating to the trade.

The first indication to consumers that there was to be a gas changeover was in newspaper stories in April, 1946, four months before conversion work began. It was based on a release by the company president. The newspapers were very coöperative in presenting the facts, reasons, and benefits in substantially the manner these data were supplied to them.

During the billing cycle ending approximately a month before the changeover began, a miniature 4-page letter was enclosed with every bill to customers in the suburban areas. The front page told of the change in billing from cubic feet to therms and the inside spread illustrated typical bills to show that identical consumption of British Thermal Units would result in identically billed amounts. The company emphasized that it was selling *heat*, instead of gas.

Approximately three weeks before the beginning of the changeover,

every customer to be affected in the first district received a first-class letter giving him the "whys" and "wherefores" of the changeover.

THE first "big gun" of the campaign was fired a week before the changeover started. It was a full-page newspaper advertisement, appearing in every publication serving the areas to be converted. One such advertisement showed the area in Virginia, while two separate advertisements were used in the more widespread Maryland area.

The company then sent out specific instructions, in a 4-page 8½-by-11-inch folder, one week before change-over day for the customers to be affected. First-class mailings of this 2-color folder were continuous, reaching every user a week before his service was to be changed.

The second day before a district was to be converted, a red and black handbill was delivered personally to users by Conversions & Surveys, Inc. The date of the changeover was stamped in the space at the top, and the handbills were die cut so that if no one was at home the notice could be slipped over the doorknob.

All commercial, industrial, and institutional establishments were visited by company men prior to the changeover and special arrangements made to assure a minimum interruption of business activities. Many of these customers were converted during the



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PUBLIC UTILITIES FORTNIGHTLY

night preceding the introduction of natural gas.

In view of all this preparation, it was not surprising that housewives and commercial users were "all set" when adjusters rang doorbells at 7 AM on C-Day. The total number of Can't-Get-Ins was less than 2 per cent of all gas users—one of the lowest rates ever experienced in a changeover of this kind anywhere. In such "CGI" cases, the gas service was shut off either at the curb cock or by digging up and disconnecting the pipe. A yellow tag, with lettering in red, was wired to the doorknob of the home so that the householder would understand immediately. The reaction to this technique was "very favorable," company officials say. Far from being angry, all the customers who had forgotten C-Day, or otherwise had to be out of town and missed the preliminary notifications, were grateful. Many were quite apologetic. The company, of course, restored service as quickly as possible after receiving a call from the user. In some instances, special conversions were made as late as 10 PM for householders thus inconvenienced, although the company had given them ample notice. "CGI's" were kept to a minimum in large apartment projects or other multiple dwellings served with master meters by advance calls by field men on building superintendents. In this way, special arrangements were made to have the individual tenants' keys or master keys available.

CUSTOMERS were urged in preconversion material to call the company if there was anything they did not understand. Employees in the telephone service department had been

briefed particularly to answer all questions about the changeover.

As the consumer campaign progressed, all members of the management organization received official memos with copies of all mailing pieces and advertisements, so that everyone might be posted as to what was going on.

What the company considers its most effective accomplishment, in the information field, was a 24-page and cover informational booklet, 5 inches by 7½ inches in size, delivered in a personally addressed envelope to every employee of the company, at the time the changeover work began. The complete story of natural gas utilization and changeover problems was told in simple language, with 35 numbered paragraphs occupying more than half the book. The remainder of the book was devoted to an exhaustive alphabetical index of all the subjects covered—so that employees could find the answer in a few seconds to whatever questions might be asked.

Finally, to make doubly sure that no angles had been overlooked, the company sent out two special letters to the trade just as the changeover began. One was a 2-page letter to manufacturers of all gas appliances known to have distribution in the Washington metropolitan area. The letter told of the changeover program, and suggested that appliances shipped to the area be equipped with proper burners, properly tagged, and that alternate orifices be supplied to distributors, so that they might make proper deliveries in both mixed gas and natural gas areas.

THE second letter went to all wholesalers, distributors, and appliance



Biggest Challenge on Conversion

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retailers, urging them to call the telephone service department before delivering any appliance, in order to be sure of the type of gas being served in the customer's location. A copy of the letter to the manufacturers was enclosed.

"Customer reaction to the field work, particularly comments as to how it was planned and executed, was very favorable," Mr. Boothby asserted. "Reaction to appliance performance in the period since conversion has been very interesting. Many customers feel that their appliances perform better with natural gas. A lot of them feel just the opposite.

"There is no question in our minds but that the appliances in general are in better and more nearly correct adjustment as a whole than they ever have been at any time before. It is difficult, however, to persuade a housewife that her formerly overgassed range, which she had become accustomed to, and which performed to her satisfaction, is right now and was wrong before.

"Hotel and restaurant chefs and cooks, as is generally known, are notorious for wanting high flames to lick up over the sides of their pots and pans. After changing over hotels and restaurants, we encountered some headaches in obtaining the desired amount of 'overgassing' for individuals who wanted it. The conversion men had no course to follow other than to adapt the coffee urn, the top burners, or the oven burners, to the rated input with natural gas. To meet the personal desires of each chef and cook was time consuming and costly.

"All these matters were being worked out when other things happened to establish what was our newest low in customer relations in recent years.

"IN the closing days of September, 1947, with thirty days of conversion still to go, a sudden cold snap imposed a heavy load of 'light furnace' orders on us. The same cold snap resulted in a sudden increase in daily

PUBLIC UTILITIES FORTNIGHTLY

gas loads of 100 per cent and, accordingly, doubled the velocity of gas through the mains. The direction of flow of the gas in the mains was directly opposite in many cases to what it had been before. The deluge of pilot stoppage orders which ensued persuaded us that all the dust which ever had gotten into, or had formed, in our mains was being picked up and carried along to the appliance pilots, in about the same way that a hurricane might stir up the 'dust bowl.' That's the way it seemed until we discovered that our primary trouble was not dust—but vapor phase gum, which was wholly unsuspected as an offender, since most areas were being supplied with straight natural gas.

"Apparently, our system still contained enough of that which is required under a given combination of conditions to cause and to carry along vapor phase gum and to deposit it in the small appliance orifices.

"The combination of furnace orders, not only lights, but also many adjusts, etc., plus the hundreds of cases of requested appliance adjustment following conversion, plus the deluge of pilot outage orders and the regular crop of persons who called about 10 AM to inquire what time their appliances would be converted—these all together imposed a servicing load on our organ-

ization which reached such a high as to cause our telephone facilities to become overloaded. There were a few days when customers got 'busy' signals the greater part of the day. That general condition lasted a while, and then tapered off, until for many weeks now, we have had a condition more nearly approaching normal, whatever that is.

"What the situation in respect to gum and dust will be in the future, we will not hazard a prognostication.

"To date, expenses for claims resulting from appliance conversion stand at less than \$50,000. On the whole, we feel we came out well in this connection.

"THE matter of the placement of more than 200 production plant men who were not required after we shut down some of our production involved no unusual troubles. Our system growth has been such that, with a few exceptions, these men have been transferred to other departments.

"The conversion of any company, regardless of size, from manufactured or mixed gas to natural gas is an undertaking of great magnitude. The extent to which it is carried out successfully depends on the degree to which the work is planned carefully in advance and the efficiency with which the work is executed."

"THERE may have been a stage in its early development when the capitalist had grounds for believing that he was the boss of the capitalist system. In the present state of affairs, it must be very plain that the consumer is the boss of the system and that the capitalist has no function except to cater to him; the capitalist's success in doing so determines whether he lives or dies. The expression 'monopoly-Capitalism' expresses two ideas which are antithetical. When monopoly comes in Capitalism ceases to be Capitalism. It becomes statism, as the British are now demonstrating."

—EDITORIAL STATEMENT,
The Wall Street Journal.



Underground Storage of Gas

Storage of natural gas in underground pipe sections is increasingly important to the gas utility industry. It is safe, reliable, economical, and quickly installed.

By D. V. MEILLER*

THE improvement of gas storage technique has been a challenge to a great many engineers who are active in development work. We are all familiar with the conventional type of gas holder built above the ground. It is used primarily by companies which distribute manufactured gas. One of the chief characteristics of the majority of these holders is that they operate at a low pressure, a fraction of a pound per square inch.

They serve many purposes in connection with the manufactured gas industry, the principal ones of which are:

1. Leveling off the fluctuations in the hourly load, thereby permitting operation of the gas manufacturing facilities at an even output.
2. In cases of very high hourly or daily send out, when the load may exceed the instantaneous capacity of the gas manufacturing facilities, the holder may be called upon to furnish the deficiency.
3. They provide a source of supply in

the case of a temporary shutdown of a part of the gas manufacturing facilities for repair or maintenance.

4. In seasons of light load the gas manufacturing facilities may be operated on less than a 3-shift basis by depending upon the holder for the hours when the gas requirements are low.

For these reasons it is apparent that in the manufactured gas industry the gas holder and its operation is not only economical but necessary.

On the other hand, the early gas utilities which distributed natural gas did not, generally, find it necessary to install holders. Originally, the source of supply was not far distant from the distribution centers and, usually, the amount of gas available was limited only by the pipe line from the field to the load center, so that in most cases it was more economical to install additional pipe-line capacity than to build gas holders.

*Staff engineer, Public Service Company of Northern Illinois.

As the market for natural gas expanded, and with the develop-

PUBLIC UTILITIES FORTNIGHTLY

ment of long-distance, large-diameter, thin-wall, steel gas pipe lines, of high capacity, many of the gas companies which formerly distributed manufactured gas changed over to natural gas operations, or to a mixture of natural gas and manufactured gas. The economics of distributing natural gas, by these companies, was different than it was with the companies who started out with the distribution of natural gas from near-by fields. As the loads of these companies grow and exceed the capacity of the supplying pipe lines, the installation of additional pipe-line capacity is more difficult from financial and physical aspects than in the case of companies close to the source of supply.

Large-capacity, long-distance pipe lines are in general very reliable facilities. However, no matter how capable or diligent the operators of such pipe lines may be, there is always the possibility of a break in them from causes beyond the control of the operators, with resultant temporary interruption of gas deliveries, either total or partial, to the ultimate distributor. Some utility companies served by long-distance pipe lines are fortunate in having depleted gas fields near at hand in which they can store gas during the summer, and from which the gas can be later withdrawn and used for peak loads or in cases of emergency. Where gas manufacturing facilities are not available, or where gas manufacturing capacity is insufficient to carry the load in an emergency, it is desirable to store gas locally in quantities predetermined by the excess of the load over the capacity of the gas manufacturing facilities.

THE Public Service Company of Northern Illinois converted its
OCT. 7, 1948

northern operating division from 800 BTU mixed gas operation to natural gas operation. The load, which is predominantly residential, has grown very rapidly in this area north and northwest of Chicago. Of the 50,000 customers served in this area, about 12,500 are using gas for space heating. This space-heating load has resulted in a very high peak load on cold days, thereby making more difficult the problem of storing gas in sufficient quantities to afford the desired system protection. Recognizing the desirability of some type of natural gas storage for this and similar situations, the Public Service Company undertook a research program to determine the most feasible method of natural gas storage. Some of the methods considered were:

1. Conventional low-pressure gas holders.
2. Conventional high - pressure, above ground, gas holders, with pressures in the order of 60 to 100 pounds.
3. Storage of natural gas in the liquid state at low temperatures and substantially atmospheric pressure.
4. Natural gas absorbed in propane, either at low temperatures and nominal pressures, or at normal temperatures and high pressures.
5. Other methods, among which are absorption, and in hydrate form.
6. Gas stored at high pressure in buried pipe.

Some of the requirements for such storage are:

1. It should be safe.
2. It should be reliable.
3. It should be subject to quick installation.
4. It should have a low operating cost.
5. Investment required should be reasonable.
6. It should not be unduly complex in design or operation.



Conversion from Mixed to Natural Gas

"THE Public Service Company of Northern Illinois converted its northern operating division from 800 BTU mixed gas operation to natural gas operation. The load, which is predominantly residential, has grown very rapidly in this area north and northwest of Chicago. Of the 50,000 customers served in this area, about 12,500 are using gas for space heating."

AFTER considering the various methods, it was decided that storage at high pressures in buried pipe was best suited to our particular problem and requirements. Accordingly, in 1946, the company designed and installed near Kankakee, Illinois, a natural gas storage field of this type, which field stores 1,250,000 cubic feet of natural gas. This field served as a pilot plant.

This new type of natural gas storage consists of buried random lengths of 24-inch outside diameter seamless, high-carbon, alloy steel pipe, the average length being about 40 feet.

To avoid field welding of this high-carbon pipe, both ends of each length of pipe are swedged down and tapped for 1½-inch pipe thread.

Many of the costs entering into this type of gas storage, such as the cost of trenching, coating, laying, cathodic protection, land, etc., are independent

of the operating pressure; therefore, a high operating pressure obviously results in lower costs per unit of gas stored. The operating pressure selected was 2,240 pounds per square inch, at which pressure the compressibility factor of natural gas is near the optimum.

Because of the departure of natural gas from the laws of perfect gases, the stored volume of the particular natural gas involved is, at 40 degrees F. and 2,240 pounds, approximately 43 per cent greater than the calculated storage of a perfect gas.

THE compressibility factor becomes more favorable with decreasing temperature; therefore, it is desirable to bury the pipe at a depth which will result in reasonably low temperatures in winter (say about 40 degrees for the Chicago area) and yet minimize seasonal temperature changes. Due to the seasonal temperature changes, some

PUBLIC UTILITIES FORTNIGHTLY

gas must be withdrawn from storage in the spring and summer, and an equivalent amount put back into storage in the fall and winter. At the operating pressure of 2,240 pounds, each one degree F. change in temperature will cause a pressure change of about 10 pounds, of which about one-half is due to the change in the compressibility factor which accompanies the temperature change.

After the Kankakee installation proved entirely successful, from both cost and operating viewpoints, a similar but much larger installation was made in our northern operating division. The existing facilities for peak load and emergency supply to this northern division area consisted of a gas manufacturing plant with five carbureted water gas sets, and a 5,000,000 cubic foot low-pressure holder. To provide additional protection against temporary failure or diminution of the normal natural gas supply, the company installed propane facilities and 40,000,000 cubic feet of natural gas storage in buried pipe sections.

THESE combined facilities have sufficient capacity to supply two maximum days' load with a gas consisting of approximately 50 per cent natural gas, 25 per cent propane gas, and 25 per cent carbureted water gas. Such a gas comes well within the range of acceptable burning characteristics. All of these facilities are so installed and arranged that any one or all may be used for peak shaving if desired; that is, if on a very cold day the load should exceed the quantity of natural gas available from the pipe line, the deficiency would be supplied by these facilities.

OCT. 7, 1948

This 40,000,000 cubic feet of storage was installed and in service only six months after the start of construction, and within one year after authorization to proceed. We considered this very satisfactory, particularly in view of the present slow delivery of equipment and materials.

The cost of this 40,000,000 cubic feet installation was in the order of \$45 per thousand cubic feet of gas storage capacity for the storage field. The total cost, including the compressor and send-out station, land, engineering, etc., was in the order of \$60 to \$65 per thousand cubic feet of gas storage capacity. When the ultimate storage of 70,000,000 cubic feet is installed at this site, it is anticipated that the average cost per thousand cubic feet will be in the order of \$55.

While there have been no conventional type gas holders constructed in this area recently, our best estimate is that the cost of such holders today would be in the order of three to five times the cost of high-pressure storage in buried-pipe sections.

THIS type of storage has many advantages where it is applicable. Obviously, a considerable part of the favorable economics is incident to the supercompressibility of natural gas. Likewise, suitable land must be available at reasonable prices. About 75,000,000 to 80,000,000 cubic feet of storage capacity can be installed on 160 acres, with the spacing we have used. These are two limitations. On the other hand, the relative appearance and the freedom from aboveground hazards are certainly advantages. Also, we are in the early stages of a development and are finding opportunities for

UNDERGROUND STORAGE OF GAS

lowering costs and improving flexibility of design which we believe will lead to further advantages.

With over 40,000,000 cubic feet of this storage installed and another 12,500,000 cubic feet under construction by associated companies, and with some 40,000,000 cubic feet planned for 1948 installation, our experience in construction and operation has shown

it to be safe, reliable, economical, pleasing in appearance, and quickly installed.

When required, a high percentage of the stored gas can be sent out at high rates of flow, with nominal investment in send-out equipment. We believe that this method of storage is ideal for many situations where natural gas must be stored.

AGA 1948 CONVENTION TIMETABLE

All business sessions and social functions to be held at the Atlantic City Convention Hall ballroom-auditorium, unless otherwise indicated. The Gas Appliance Manufacturers Association exhibition also at the auditorium; open from 9 AM to 5 PM daily, October 4th to 7th—from 12 noon to 5 PM, October 8th.

Monday, October 4th

- 10:00 AM Natural gas department, first session.
- 2:00 PM Registration opens in auditorium lobby through 5 PM. Same hours on October 5th through 7th.
- 2:00 PM Manufacturers gas department, session.
- Evening President's reception and dance. (Dress optional.)

Tuesday, October 5th

- 10:00 AM First general session. Opened by the president.
- 12:00 PM Executive session (company member delegates only).
- 12:00 PM Industrial and commercial gas, first session—Ritz-Carlton.
- 2:00 PM Home service round table—Rose Room, Traymore.
- 2:00 PM General and property records accounting—Benjamin West Room, Haddon Hall.
- 2:00 PM Materials and supplies accounting—Room 1333, Haddon Hall.
- 2:00 PM Joint AGA-EEI taxation accounting—Mandarin Room, Haddon Hall.
- 2:00 PM Customer accounting activities—Viking Room, Haddon Hall.
- 2:30 PM Technical, first session—Ambassador.
- 2:30 PM Afternoon ladies' party—Solarium, Marlborough-Blenheim.

Wednesday, October 6th

- 8:00 AM Home service breakfast—American Dining Room, Traymore.
- 10:00 AM Second general session.
- 12:30 PM Accounting general session luncheon—Vernon Room, Haddon Hall.
- 2:00 PM Residential gas.
- 2:30 PM Technical, second session—Ambassador.
- Evening Dancing and entertainment. (Dress optional.)

Thursday, October 7th

- 10:00 AM Third general session.
- 12:30 PM Personnel executives committee luncheon—Rose Room, Traymore.
- 2:30 PM Technical, third session—Ambassador.
- Evening Manufacturer-Utility-Dealer Get-Together, entertainment.

Friday, October 8th

- 2:00 PM Gas appliance dealers meeting.
Also LP-Gas appliance dealers merchandising program.



Movie Angles in a Big Construction Job

How the filming of a 1,200-mile pipe line was planned along with the engineering—and how such a picture improves public relations for two Los Angeles gas companies.

By JAMES H. COLLINS*

WHEN a utility company has an out-of-the-ordinary construction job aplanning, it might pay to consider making a motion picture of everything from start to finish, and some of the background details. Not only for a record, but for public relations. The time to decide for or against is when the engineering is in the early stages. Because shooting such a picture has to start with the first construction work, and continue to the end, and most of the camera grinding has to be timed closely to the operations. There are no retakes in this kind of cinematography.

How to go about it, and what to do later with such a picture, is shown in the recent filming of construction on a 1,200-mile natural gas pipe line, from

Texas to Los Angeles, built for the Southern California Gas Company and Southern Counties Gas Company, serving the Los Angeles area.

"We don't build a \$70,000,000 pipe line every day," said executives, and the movie was earmarked from the first as part of the big project.

Several years before, these companies had discovered the values in such a film when they built a shorter pipe line. That was the 100-mile line to bring natural gas from California oil fields to an underground reservoir near Santa Barbara, the La Goleta project (PUBLIC UTILITIES FORTNIGHTLY, April 12, 1945). When construction started the engineers took considerable movie film for record purposes.

Some of the photography seemed to call for professional picture people, and they were engaged.

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MOVIE ANGLES IN A BIG CONSTRUCTION JOB

Also, it was discovered that the project had definite popular interest—squeezing the natural gas out of gasoline, storing it in a vast underground cavern left by exhausted oil wells, and piping it into your kitchen on the coldest day of the year; that was plainly something typical of California, to Californians.

So, a 30-minute film was edited from the footage taken for record and possibly other uses, and this has for several years had good circulation at meetings of service clubs, business groups, women's organizations, and the Los Angeles public schools, to go into the library, and they are frequently shown to classes. The gas companies have a film librarian who responds to all requests for showings.

The Texas pipe line had greater popular interest for several reasons.

It was bigger, and also new—and as the first word with Americans is *new*, and the second word *big*, that held possibilities.

Then, it would bring additional supplies of gas for the growing southern California area, assuring ample fuel for new homes (now being metered at the rate of 65,000 monthly), and for the expanding industries that made jobs for the new home owners. People in this area thoroughly understand that they have to go far for water, fuel, power, and markets.

Also, there was the practical angle that it would lower gas rates, or at least keep them at present levels, as well as insure against emergencies and provide better service.

There was more picture "background" to the Texas line, more scenery, such as mountains, deserts,

rivers to cross, and a good deal of early western history, like ghost towns near which the line would pass, and old forts, trails, and passes. Lumped into background might be the spectacular recent growth of southern California, pictured in arriving residents, expanding towns, and industries.

POPULAR interest is a practical yardstick to gauge the field for such a picture. It is composed of things people will want to see, and of self-interest in matters like rates, community pride, and so on.

From the outset it was meant that this should be a professional job of picture making, and so several Hollywood commercial picture concerns were invited to make "proposals." Hollywood has many picture companies specializing in public relations, advertising, employee training, educational and similar films, for business sponsors, and the groups selected for proposals were known for their work in this particular field. Incidentally, Hollywood goes anywhere for business, and inviting proposals is the way such a project generally starts.

The proposal may be a bid for making a specified film, described in terms of footage, subject, uses, and other points. The sponsor explains what he wants to do with the picture, which gives the picture makers something to figure on.

Some sponsors consider cost first of all, often because they are limited to so much money for a given picture, and the contract is awarded to the lowest bidder. Others have limitations of footage, and subjects to be "shot."

This contract went to Polaris Pictures, Inc., of Hollywood (5859 West

PUBLIC UTILITIES FORTNIGHTLY

Third street, Los Angeles 36), and was awarded on the completeness of the program outlined, after the gas people had laid down specifications covering the route, the background shots, and, most of all, what the picture was wanted for.

EXECUTIVES of this picture company advise that even where the amount of money to be spent is limited, the details of cost, length, and so forth be set aside during the proposal stage, so the sponsor and picture makers can concentrate on what the picture is to do.

It can be just a technical record, or a film to show to employees for training or morale purposes, or for special showings to organizations, or educational purposes—and from that on up to news-reel showing.

With an open mind on cost, the best possible picture for the purpose can be planned, and then the footage and costs can be adapted more intelligently. Often when thinking starts for a one-purpose film, for an engineering record, or employee showings, the number of purposes can be multiplied—and each new use added lowers the cost in terms of value to the sponsor.

"There is apt to be too much commercialism in the average commercial film," say Polaris executives, meaning that the sponsor's viewpoint dominates, popular interest and entertainment are

overlooked, and consequently the picture does not create audiences, and audience demand. With commercial motives subdued, and audience interest developed, there will be demand from people who have heard the picture praised by past audiences. And the commercial ends are really better served, because subordinated.

THE first step of the picture makers was to motor over the whole route, and chart the many points where picture interest would be found. The line was to pass through a vast stretch of rugged country, from northeastern Texas, across southern New Mexico, Arizona, and California.

Picture interest was considered in the engineering and construction features, such as the descent of a great escarpment at Mount Guadalupe, Texas, and the bridging of the Colorado river. There were scenic shots, and historic landmarks, such as the famous Apache pass, and old Butterfield trail, and the ruins of Fort Bowie.

How picture judgment comes in here may be illustrated by one of the historic shots that was rejected. Many years ago, Uncle Sam conceived the idea of camel transport in these southwestern deserts, and camels were imported, and used for a time, and then abandoned. Some of the animals were said to have escaped to the desert, and bred, and



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MOVIE ANGLES IN A BIG CONSTRUCTION JOB

once in a while there is a rumor of camels surviving.

Picturesque and photogenic—but turned down because it would detract from the main theme of the picture. On the same principle the entertainment picture producer constantly rejects ingenious ideas, like the miniature windshield wipers once proposed for Harold Lloyd's specs, which were rejected as a distraction from the picture story.

There is so much material in 1,200 miles of territory and eighteen months' filming that the problem was one of elimination. The best scenes must not only be settled upon, but played up. Pictures with one good central theme, and not too many different ideas for expounding it, are best as entertainment or for business purposes. Here is where the professional picture sense comes in.

AFTER the scenes and localities had been tentatively chosen, then the film people and the engineers worked closely together to determine whether a given scene would offer better picture material than some others. With a shooting schedule blueprinted, then came a timetable—when would each scene be reached in the progress of construction, so the camera crews could reach the spot with minimum traveling, and expend the least time?

With such a schedule, the picture people could lay out work weeks ahead, and engineers shape up construction to reach a dramatic point on a given day. Sometimes the shooting phase at a particular locality would be reached within a few hours of the timetable, and everybody would be on hand. But again, there were delays, and in more

than one case the shooting phase was reached several hours ahead, and then the camera crews had to hustle.

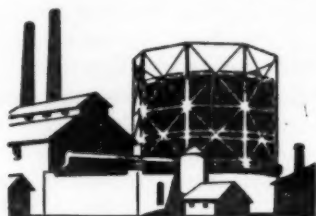
Weather comes in—the big moment in construction may be reached when it is raining.

Light comes in even more—the big moment arrives at 5 PM of a winter afternoon, when black-and-white photography at its best is not possible, and color filming flatly impossible.

This picture was made entirely in color, and for that, the camera men say, the ideal hours are from 9.30 in the morning to 3.30 in the afternoon, on a bright day. Construction cannot be stepped down to such limits, of course, and so a good deal of the photography has to be a compromise between engineers and camera men. But engineers and contractors soon get to working nicely with each other, because each gets interested in the other's technique and problems. Also, top management can intervene when the schedule is out of focus, and in a difference of a few hours can say, "Let that trench job lay over until tomorrow morning—it is important to have it stand out in our picture."

BACKGROUNDS come in importantly. Contractors were puzzled because a given job, a high spot to them, with a large amount of equipment and a major work force in action, was passed up, and camera men mobilized for a similar job at some other point on the line. The second job was chosen because it had a dramatic background, where the other was carried out in flat, uninteresting country.

Except some of the incidental shooting, such as ghost towns, motorists arriving at one of the California agri-



Pipe Line from Texas to Los Angeles

"THIS line [from Texas to Los Angeles] has 1,204 miles of pipe, 24 to 30 inches in diameter. By 1949 it will be carrying 305,000,000 cubic feet of gas daily, at pressures up to 807 pounds. The fuel travels from Texas to Santa Fe Springs, the California terminal, in about eighty hours, boosted along by 13 compressor stations with 148,000 horsepower."

cultural quarantine stations, and the like, there were no retakes possible. A big vital construction operation, when finished, was done, and the final editing had to be limited to what was found in the can.

For this reason, there will be several cameras grinding on each important shot.

In entertainment pictures, the scenes can be taken over and over, to give a choice of shots to be used. In commercial work, the same end is gained by making several simultaneous shots, from different angles.

"Film is the cheapest thing we use," say the producers, meaning that after the expenses of getting camera crews up to the critical operation, at the right time, and with the right conditions, nothing is cheaper than raw film at about \$9 per hundred feet. Making four times the footage that will eventually be used is an average for commercial pictures, but for this picture

the ratio was ten times—and the total cost of film was around \$1,400, maybe the lowest expense on a \$40,000 picture.

The whole job was done on 16 mm. film, and the cameras used were of an amateur type.

THE reasons for this were that such cameras can be operated by a small crew, even one man, are lighter to get up into difficult places, and with experienced camera men yield pictures that are equal to the wider 35 mm. entertainment film. Also, the 16 mm. projection machines, the "suitcase" projectors, are most common in business and educational equipment, so the narrower film has a better chance at audiences.

When finally cut for the gas companies' requirements, this picture, running thirty minutes, had four kinds of spectator interest, rather nicely allocated as follows:

MOVIE ANGLES IN A BIG CONSTRUCTION JOB

	Per Cent
1. Establishing the community value of the pipe line and the need for going 1,200 miles for gas	10
2. Showing the growth of southern California in population, industry, and gas consumption	10
3. Historical and scenic background	20
4. Actual construction operations	60

Engineering and operating details were included. They are impressive. This line has 1,204 miles of pipe, 24 to 30 inches in diameter. By 1949 it will be carrying 305,000,000 cubic feet of gas daily, at pressures up to 807 pounds. The fuel travels from Texas to Santa Fe Springs, the California terminal, in about eighty hours, boosted along by 13 compressor stations with 148,000 horsepower. It crosses 10 rivers, 5 underneath, and 5 overhead, by suspension and truss bridges. The daily gas load weighs around 15,250,000 pounds, and is equivalent to 51,000 barrels of oil, or 189 cars of coal, or the electrical output of Hoover dam multiplied by 6.

THE potential audience values of such a film are something to be analyzed in the planning, according to the character of the picture, and the results desired by the sponsor. Audience analysis is a sort of market survey, and can affect the final picture.

Generally, advertising value is considered among first things, but in this case it was negligible, because the two gas companies supply all the gas used in their area. They have first-rate competition with electricity, but if the picture happened to create more gas customers, they would automatically apply

for connections with these companies. Even where more sales were possible through such a picture, it might be good policy to subordinate advertising to audience interest.

Many commercial and educational films have theatrical interest, and are shown as "shorts" in about 5,000 theaters over the country. Their distribution is well organized.

But for "Westward Flow," this audience would be temporary, lasting only while the project was news, and its chief value lies in the home territory of the two companies.

Still, theatrical quality is desirable in such a commercial film, because if it has entertainment appeal up to theater standards, it will be that much more effective in public relations. Some of the best public relations films, and even those made for advertising purposes, hardly mention sponsor or products. Audiences are left to get business connections indirectly.

PUBLIC relations audiences are found among service clubs, women's organizations, neighborhood meetings, and similar places where entertainment is appreciated—but expected free. These organizations are served by a company film department, or librarian. In some cases, executives also speak when the film is shown. The demand for free entertainment appears to be unending, and the previous pipe-line picture is still in demand, because it shows a different kind of construction.

School showings are on a different basis, because the schools want to own prints, keep them in the educational department library, and do their own distributing. Such films are handled by a "visual education" department, and as-

PUBLIC UTILITIES FORTNIGHTLY

signed as needed. At the right point in classes studying natural resources, or the machinery of the modern city, such films will be shown to give a mass of information in the shortest time, and most interesting form, and clinch a lot of book study. The life of a visual education film may be several years, or until it is displaced by something later.

Then, there is considerable circulation among people who want to see the film in connection with their work, including gas company people from other departments, and shop audiences of many kinds. The film is in request for technical meetings of engineers and specialists, who want to see how a given job was done.

THIS film has some rather unusual by-products, which are being developed by the sales department of the picture company.

With nine times as much film left in the can as was used in "Westward Flow" itself, there is a great deal of footage of value to equipment and supply people, contractors, and others.

Example: Pipe wrapping was one of

the operations in this construction job. It was photographed in detail, from end to end. When the gas company film was edited, pipe wrapping was shown starting, and then finished. A Hollywood director cuts out details, because they are boring.

But a manufacturer of pipe-wrapping equipment would want to show all the details to a prospective customer, or to new employees in training—"Here is our latest job, and this is how we did it." As the Chinese say, "One picture is worth many words."

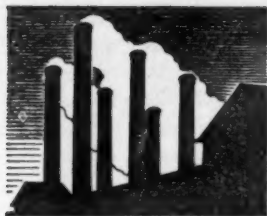
Quite an array of special purpose pictures is being made out of the can for manufacturers and contractors who use them in sales work, employee training, public and trade relations, and so on. With this by-product aspect the gas companies have nothing to do. But it gives them extra circulation of considerable value. And the business concerns that can use such special films get them on an attractive cost basis, because the unused footage from which they are edited has already been paid for.

It's in the can!

"UNDERSTANDING of management's functions, policies, and philosophy by employees and the public is more essential in our land today than ever before in our history. It becomes more important with every passing day. Our time is limited. Our American system of business and enterprise—the system under which this nation grew and became great—is challenged from every side. It is challenged by friend and foe from without. It is challenged by people right here at home who enjoy the individual freedoms and high standard of living it provides. Unless management is able, through reasserted leadership, to regain public and worker understanding and faith, the prospects are dark. To do it, we've got to act. We've got to resell ourselves to our employees and the public. We've got to start talking more to others and less to ourselves."

—C. W. KING,

Vice president, Allegheny Ludlum Steel Corporation.



Gas Research Produces Results

In the three years since its comprehensive program of exhaustive investigation and experimentation has been under way, the American Gas Association has spent nearly a million and a half dollars with good results in the quest for improved means of fulfilling the industry's high service obligations.

By BETTY LEE GOUGH*

ONE day in the not too distant future, restaurants—and even homes—may be using small gas appliances that can be plugged into an outlet in the same manner that electric appliances are. Then another score will have been racked up in a continuing and highly successful research campaign that has been going on for the last three years. In that time, the American Gas Association has spent approximately a million and a half dollars to improve gas processes and appliances and open up new uses for gas. Some notable results have been achieved.

In the case of the search for workable “plug in” gas appliances, the American Gas Association has this to say in a recent research report:

“Small restaurant and counter appliances are in a highly competitive field. Despite certain inherent disadvantages in heat application, gas has maintained leadership in this field. In

order to further fortify the position of gas, a comprehensive project to improve the heat application, control, and internal venting in counter and miscellaneous restaurant appliances has been undertaken at the AGA Laboratories. This work is of additional importance because of the widespread introduction of air conditioning in restaurants, lunchrooms, and drugstores.

“Primarily for use in this field, but with broad applications in other fields, there has been developed an automatic plug-in connector. Based on this development, a prominent manufacturer has produced a number of working models and, after market surveys are completed, is preparing to manufacture plug-in connectors of various sizes. This will fill a long-felt need.”

Exactly what research has been carried on in this far-reaching 3-year program? What processes and new uses has the American Gas Association explored? Why, and with what results? What plans has the association for future research?

*Professional writer of business articles, New Orleans, Louisiana.

PUBLIC UTILITIES FORTNIGHTLY

IN the three years since its comprehensive research program was launched, the AGA has spent nearly a million and a half dollars. It plans to spend between four and five hundred thousand dollars this year. These large sums are subscribed by the members of the association voluntarily, and the AGA can now truthfully boast that its industry is a national leader in the use of coöperative research to overcome industry problems and open the doors to greater opportunities.

The actual scientific spade work is carried on in a number of research laboratories. At the American Gas Association's own lab, in the Institute of Gas Technology, at Battelle Memorial Institute, and—on a project-by-project scale—in university laboratories and private research institutions, the job of working for gas goes on. There are four main categories of research: gas production, general technical matters, domestic gas, and industrial and commercial gas research.

These four categories have been separated from each other because each represents a major industry aim in so far as improvement of processes, techniques, and equipment are concerned.

The gas production research is aimed at improving present manufacturing processes and developing new processes. Particular emphasis is being placed upon the new problems stemming from critical raw material shortages and current high construction costs, with special reference to peak-load requirements and substitute gas mixtures.

NATURAL gas production, distribution, and storage problems are under consideration in the general tech-

nical research category, together with an investigation of possible methods of removing organic sulfur from manufactured gases.

More than half a million dollars has already been put into domestic gas research to study characteristics of domestic gas appliances. The aim is to improve their performance and design. Studies are also going forward in the development of new appliances.

Explorations in the industrial and commercial gas fields are largely concerned with the development and improvement of various gas heat treatment processes for industry, and improved heat applications in commercial cooking equipment. Special studies are being made of the possibilities of applying forced combustion, with or without radiant heat, in commercial cooking equipment.

Many of these studies are of a long-range nature, requiring considerable time before any conclusive results can be obtained. In others, however, progress has been sufficiently rapid to lead to immediate improvements and to encourage pilot operations for confirmation of laboratory findings.

How much has been accomplished in the past three years can be judged by the best yardstick of all—results. Here are thumbnail reports on some of the projects:

At Battelle Memorial Institute and the Institute of Gas Technology, the scientists are busy making evaluations of the oxygen-steam-carbon reaction—one at ordinary temperatures and pressures, the other at elevated conditions. In these projects the AGA is learning about the full possibilities of the water-gas process, and it has accumulated important facts and figures on new meth-



All-year Air Conditioning

"THE introduction of all-year air conditioning from a single machine has created the need for the simple air distribution systems that will give satisfactory summer and winter service. The present high cost of installing air ducts makes this a limiting factor in the sale of gas summer air conditioning. So the AGA is developing data to assist in designing and installing simplified, low-cost combined summer and winter air distribution systems."

ods for producing high BTU gas and reforming of hydrocarbon gases. The AGA considers the \$100,000 spent (and to be spent) here as a good investment.

TODAY, production of gas by catalytic cracking of hydrocarbons is a commercial fact. But the how of doing it was discovered in the research laboratories by the American Gas Association.

At the Chester, Pennsylvania, plant of Philadelphia Electric Company, the AGA has installed a pilot plant where the process was tested. There, 300 BTU gas has been produced from refinery and natural propane, refinery oil gas, and refinery butane. Another gas company has installed plants for reforming propane by this system. It reports that the process allows production of a gas that's completely interchangeable with coal gas and carbureted water gas.

The practicability of producing high

BTU gas from heavy and high carbon oils is now being tested at the Spring Garden plant of the Consolidated Gas, Electric Light & Power Company of Baltimore. The potential economies are substantial where it is proposed to distribute a high BTU gas, or where production is large for peak-load purposes. Research has already extended the flexibility of this process and further interesting developments are promised. Many companies will modify their present high BTU processes to use the cheaper high carbon oils if the Baltimore tests are successful.

Removal of organic sulfur from gas is the objective of another AGA research project. The first step, nearing completion, has been the development of satisfactory methods for the identification and determination of the amounts of specific organic sulfur compounds, and properties bearing upon the possibility of their removal. The second step is an analysis of chemi-

PUBLIC UTILITIES FORTNIGHTLY

cal reactions that might prove economical and effective for the removal of these sulfur compounds.

In addition, a laboratory and pilot-plant investigation is under way to determine the possibility of denitrogenating natural gas at or near the well to eliminate the cost of transporting the nitrogen and to improve BTU characteristics of the gas.

PREVENTION of hydrates in pipe lines is another aim of the AGA's research. Present research is attempting to discover a yardstick for predicting the formation of hydrates under critical temperatures and pressures. If it is successful, it will be possible to set up preventive measures such as inhibitors and dehydrators whenever they're needed.

Industrial gas research in its earlier days pioneered in the development of prepared atmospheres and the development of radiant tube and other types of furnaces for their practical application. Work during that period also included the subject of closer control of furnace atmospheres in furnaces heated directly with gas burners.

Recently a project was completed on the subject of heat treating in vacuum. It has attracted considerable attention in metallurgical circles. Industrial gas engineers and manufacturers of industrial gas furnaces, as well as metallurgists, are appraising its practical possibilities.

In the ceramic field, work has been done to advance the direct-heated glaze and bisque-firing processes. Aim is to reduce the cost differential between gas and other fuels. Headway is also being made in a direct gas-heated enameling firing process, based upon the re-

cent development of a self-ventilating high-temperature burner. (Six thousand two hundred dollars has been authorized, plus funds from other sources.)

At present, there is no commercial gas refrigeration equipment on the market—but soon there may be. In this field, the American Gas Association has combined research forces with a manufacturer who, it reports, "has devised a promising new commercial refrigeration cycle." Jointly, he and the AGA have conducted development and capacity tests, and have made field trials. The question as to whether the gas equipment is marketable is now being mulled over by the manufacturer.

THESE are vital research projects. But it is in the wide field of domestic gas uses that the association has worked out the most interesting processes, procedures, and appliances.

Fifteen factors that affect oven heat distribution are being studied in relation to each other and to baking and roasting procedures. Loads and heat absorption by oven utensils are being accurately and quantitatively determined with respect to radiated and convected heat. Oven heat distribution as affected by graduating and snap-acting controls is being determined. Possible locations of burners and burner ports are being explored at the AGA Testing Laboratories.

Likewise, characteristics, advantages, and disadvantages of radiant materials in domestic gas broilers are being analyzed. Comparisons are being made with conventional methods of heating broilers.

Present practice requires that gas range top grates be high enough above

GAS RESEARCH PRODUCES RESULTS

the working level of the range to give full ventilation and pass the difficult "wash boiler" combustion test. Another project is aimed at determining the factors that have a bearing on high grates, and finding other means for disposing of products of combustion.

With the growing trend toward smaller kitchens and kitchenettes in dwellings and apartments—and their open proximity to dining rooms and other living portions of the homes—proper ventilation has become a problem of major importance. No authoritative determination of the effect of gas appliances upon the kitchen ventilating problem and the home humidity is available. Two projects—one at AGA Testing Laboratories and one at Purdue Research Foundation—are directed toward finding acceptable data in these fields to guide in designing, installing, and operating kitchen ventilating systems.

To explore the possibilities of applying gas to cooking devices of quite different nature from conventional burner ranges, the Institute of Gas Technology on Domestic Gas Research is developing data on which utility men and appliance manufacturers can later make proper appraisals.

Water-heater corrosion is a serious matter. The association is spending \$22,350 to learn ways of reducing it. "There are a number of factors," it

reports, "that contribute to water-heater corrosion, one of which is stray electric currents. The initial phase of this work, which is being carried on at the Case Institute of Technology, is directed toward isolating this cause of corrosion and developing better and more reliable practical methods of preventing corrosion from stray currents."

Heat transfer in furnaces and special types of flames and burners interest the American Gas Association research men. There is little direct data available today. Now the American Gas Association is taking scientific steps to discover the facts.

Closely allied to heat transfer is the work done on special types of burners and flames adaptable to central gas house-heating equipment. Relationships between design, placement, and secondary aeration of burners as they affect combustion, heat transfer, and noise of operation are being determined.

On the competitive side, engineering and field surveys are being conducted to determine the technical position of the gas industry with respect to house heating and water heating by means of the summer-winter hookup.

FURNACE and boiler corrosion prevention work at Battelle Memorial Institute attacks a serious fundamental problem of gas appliances. While much



"EXPLORATIONS in the industrial and commercial gas fields are largely concerned with the development and improvement of various gas heat treatment processes for industry, and improved heat applications in commercial cooking equipment. Special studies are being made of the possibilities of applying forced combustion, with or without radiant heat, in commercial cooking equipment."

PUBLIC UTILITIES FORTNIGHTLY

research has been done on metal corrosion in general, no concerted research attack has been made on corrosion from products of combustion of public utility gases in the vapor and liquid phases.

New types of building design and building construction are presenting new problems in venting. Many old problems in venting, particularly where no chimney connections are available, remain unsolved. A project at Purdue Research Foundation is directed toward the latter phase of the problem.

The introduction of all-year air conditioning from a single machine has created the need for the simple air distribution systems that will give satisfactory summer and winter service. The present high cost of installing air ducts makes this a limiting factor in

the sale of gas summer air conditioning. So the AGA is developing data to assist in designing and installing simplified, low-cost combined summer and winter air distribution systems.

These are only a few of the vast number of research activities undertaken by the American Gas Association.

A complete list would show research in between one and two hundred different ramifications of gas service including appliances, burners, boilers, furnaces, production projects, home humidity controls, automatic gas storage heaters, central gas space-heating equipment, domestic gas cooking and other improvements in various branches of the service, showing that the industry is fully alert to its high service obligations.

Employee Relations and Top Management Planning

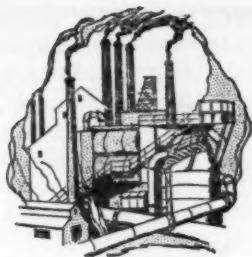
"AMERICAN industry has reason to be proud of its progress in the field of operations and production. It has made marvelous advances in research, technology, and engineering, and in the processes by which production is carried on effectively. Its executives and management have given a great deal of attention to the details of operation, to sales, and to finance, and have made American business outstanding in its achievements in those fields. Unfortunately this same careful attention and study have not been given by industry in general to the human elements that are involved in the successful carrying out of our businesses. This lack of attention has been costly in its results. Hence, there is a great need in this country for emphasis upon a recognition and a study of the human elements that are involved in business and in government and in all of our relationships. It is necessary that more attention be given to human interests and relations if we are to have the degree of coöperation, competency, efficiency, and industry required in our business, with good morale and those elements that lead to a contented, happy relationship where teamwork between management and employees produces the best results."

—HINES H. BAKER,

Executive vice president, Humble Oil & Refining Company.

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Will Synthetics Replace Natural Fuels?

What is the United States going to do for fuel, when and if it runs out of its present supply of "cheap" natural gas? Will the advent of new synthetic processes fill the gap or ease the strain on both the nation's gas and oil reserves?

By FRANCIS X. WELCH*

At the 1948 meeting of the Interstate Oil Compact Commission in New York, ending September 1st, there was witnessed a wave of speculation concerning the possibility of the nation burning up its oil and gas fuels at an accelerated pace, especially in the event of another war emergency.

Texas Railroad Commissioner Culberson, speaking of Texas natural gas reserves, said that their estimated life expectancy might fall well below the forty-three years given to them by the most optimistic witness at the recent Federal Power Commission natural gas investigation, if the present accelerated withdrawal of gas from Texas is increased or even maintained. In such an event, he predicted that the present generation will see the depletion of these reserves brought to a

point where it will have to look elsewhere for its supply of gas.

And where else would the nation look to replenish these diminishing fuel reserves upon which the economy of the country has grown to depend so much? The obvious answer is coal. The more speculative answer is atomic energy.

Inasmuch as practical widespread commercial usage of atomic energy is still more than a decade away by even the most optimistic forecast, and it might even be further deferred in the event of a fuel-consuming war emergency, let us see how the coal picture shapes up as the backbone or, more facetiously, the "ace in the hole" of the nation's cheap fuel supply.

To talk about coal replacing gas and oil usage means, of course, synthetic processes. But synthetic gas does not sound exactly right in the ear of the

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PUBLIC UTILITIES FORTNIGHTLY

gas utility operator who has long been familiar with the more common term of "manufactured gas." But the plain fact is that the synthetic process, whether for making gas or oil, is based on the well-known, by now old-fashioned, technique of manufacturing gas from coal. In the case of synthetic oil the process has to be carried further.

WHAT does this synthetic process involve?

The first step is to gasify coal by converting it into carbon monoxide gas and hydrogen gas; the same was done more than a century ago. It involves (first) making coke in standard by-product coke ovens where tars are recovered and the coke ovens give off 550 British Thermal Units per cubic foot as produced. Then the coke is gasified in water gas sets producing a gas of about 300 BTU. This, of course, would be much too poor a standard for cooking or heating so the water gas is enriched with cracked-up oil to bring the mixture up to a minimum of 550 BTU; then mixed with the coke oven gas for pressure into the city gas mains.

That is more or less the familiar standard process for making synthetic or manufactured gas.

In making of the synthetic oil, gasification must be used to bring the price anywhere near in line with the value of the natural product. Distilled oil directly from coal goes back to the Nineteenth Century when so-called "coal oil" was beginning to replace sperm oil for lamps. (It was not until a similar fuel, "kerosene," was made more cheaply from petroleum that the term coal oil was applied to both.)

During World War II many oil and

coal plants were in operation in Germany and even in England, which produced gasoline and oil from coal at a cost seven times greater than petroleum products. But in the future it might be possible, through recently discovered techniques, to produce (via gasification) a fuel oil from coal which would be economically practical. Such was the report of five scientists from the Bureau of Mines at the 144th national meeting of the American Chemical Society, in St. Louis, September 7, 1948.

THIS report, signed by L. L. Hirst, L. C. Skinner, E. A. Clarke, R. W. Dougherty, and H. D. Levene, reviewed the estimated cost for a plant producing 10,000 barrels of oil per day from coal. The report stated:

The cost of producing a fuel oil suitable for industrial use from coal is not much more than the prices paid for petroleum residual fuel oils in the last year.

We believe that such plants will be economically practical in the near future, if the present trend of prices for petroleum residual fuel oils continues. . . .

In the direct hydrogenation method, pulverized coal is liquefied in the presence of an excess of hydrogen at approximately 900 degrees F. and 700 atmosphere pressure. The products of the reaction are distilled in conventional equipment to remove the low boiling components in order to make a finished product.

The hydrogenation step in the combination process is essentially the same as in direct hydrogenation. The principal difference is that the main product is a middle oil, having a 635 degree F. estimated boiling point, which is used as the solvent in the extraction step.

What are the problems posed in the field of conservation and economics for both the gas pipe-line and oil industry if widespread use of such synthetic fuels becomes a long-range-prospect? To give this picture as briefly as possible, here are a half-dozen questions and answers—the answers being

WILL SYNTHETICS REPLACE NATURAL FUELS?



Gas Made from Coal

“ALL indications are that a medium-priced gas can be made from coal. However, new processes must be developed to do this and the gas will be in the range of 500 BTU to 700 BTU per cubic foot. Many research projects are under way on this whole subject. To make gas out of coal to be the equivalent of natural gas will be much more expensive on a BTU basis.”

based on information from reliable industrial sources.

WHAT are some of the factors causing the tremendous demand for natural gas in the midcontinent and Southwest?

The answer to this must be divided into five interdependent parts.

1. *Subnormal price of gas and other fuels.* Other fuels (oil and coal) have materially increased in price over the past ten years. The price of gas delivered into the cold northern part of the United States has remained constant in general, and in many specific areas has been reduced. On a price relationship basis gas is completely out of line on the low side and the line of new customers for gas is ever increasing.

2. *Industrial demand based on*

“cheap” price of gas. While more and more customers want more and more cheap gas in the North, scores of new chemical and metallurgical plants are springing up in the South because of the large quantities of cheap gas available to them there for fuel and processing.

3. *More and bigger pipe lines.* Transfer of Big Inch and Little Inch pipe lines from oil to gas service was only the start of a series of regional and transcontinental natural gas pipe lines since built or now being authorized by the FPC. This demand of the eastern seaboard and other areas, which have hitherto not enjoyed natural gas, is based partly on the convenience of this ash-free fuel, but chiefly on its subnormal price with relation to other fuels for house-heating and other purposes. Natural gas is the only one of

PUBLIC UTILITIES FORTNIGHTLY

the three (gas, oil, and coal) which has been continually subjected to utility regulations, thereby tending to hold the price down out of proportion to the price rise experienced in the other two fuel fields.

4. *Exhaustion of eastern natural gas field.* The eastern gas fields formerly relied upon to supply areas east of the Mississippi river where natural gas is used are dwindling very fast, whereas the demand for gas is growing by leaps and bounds in these areas because of the cheap gas price. All of this eastern load is gradually being transferred to the gas fields of the midcontinent and Southwest by the construction of long pipe lines.

5. *Even synthetic plants would have to go where the natural gas is located.* It is now cheaper to make high-octane gasoline from cheap natural gas in the midcontinent and southwest areas than to make it from newly opened oil fields and newly constructed oil refineries. Here again the cheap gas price creates another new and possibly tremendous demand. One 6,000-barrels-per-day synthetic gasoline plant using gas as the raw material will consume 100,000,000 cubic feet of natural gas per day. Two such plants are now under construction and many, many more similar plants are being seriously considered by oil and gas interests. The construction of synthetic gasoline plants, plus the growth of new industries in the Southwest, plus the construction of many new, long pipe lines, will probably treble the use of natural gas in the United States within the next decade. By 1958 it is doubtful whether our reserves of natural gas will be in any better shape relatively than our oil reserves are in 1948.

OCT. 7, 1948

CAN synthetic gas made from coal replace natural gas from a standpoint of heating performance, and from a standpoint of quality and price?

All indications are that a medium-priced gas can be made from coal. However, new processes must be developed to do this and the gas will be in the range of 500 BTU to 700 BTU per cubic foot. Many research projects are under way on this whole subject. To make gas out of coal to be the equivalent of natural gas will be much more expensive on a BTU basis. Even 500 BTU gas made near Pittsburgh will cost at least 50 per cent more than Texas natural gas presently delivered to Pittsburgh, for example. In other words, one can see no hope of any synthetic gas processes ever competing with 5-cent Texas natural gas. When Texas gas is all being used locally, or is materially increased in price, or is gone, then the consumer will have to pay more for manufactured gas. Present research projects cannot accomplish the impossible.

CAN pipe lines now being built continue their usefulness for purposes of transmitting synthetic gas after the exhaustion of "cheap" natural gas?

Colonel Thompson of the Texas Railroad Commission has made an interesting suggestion that in the future pipe lines now carrying gas from Texas to Pennsylvania might be put in reverse so as to carry gas made from coal in Pennsylvania back to Texas. This was an ingenious thought, but caused some amusement to many coal, oil, and gas operators. The hard fact is that coal reserves in the East are

WILL SYNTHETICS REPLACE NATURAL FUELS?

not limitless. Any gas-making facilities based upon coal in the East will be taxed to the limit trying to take care of the gas loads in the East. Coal, as such, would then be in much greater demand and this would also be taxing eastern reserves and coal-producing facilities. Perhaps synthetic liquid fuels would at that time be being produced from coal in the East, and this would put more additional burdens upon the already taxed coal reserves and producing facilities of the eastern states.

SHOULD the Federal government go into the pioneering of synthetic oil and gas experiments, just as it already has gone into the synthetic rubber manufacturing field; or, would private industry work it out more economically?

The view of Dr. Gustav Egloff, Universal Oil Products Company, an admitted expert in this field, is definitely negative to the proposal that the government build commercial plants to produce 2 billion barrels of synthetic oil a day. Dr. Egloff listed the following objections:

1. The 2 billion-barrels-a-day program would require 16,000,000 tons of steel, which the oil and gas industries need for expansion

to prevent reoccurrence of recent spot shortages.

2. If the coal were used, an additional 470,000,000 tons, three-quarters of our present production, would have to be mined, and 60 per cent of coal's heating value, he emphasized, is wasted in manufacture of synthetic liquid fuel.
3. Costs should be considered. Dr. Egloff said that, although government officials asked for \$8 billion to \$9 billion, industry experts estimated the cost at about \$30 billion. This investment, he said, compared with the oil industry's present total investment of about \$20 billion, would produce only one-third the present total petroleum output.
4. Huge subsidies would be necessary if the synthetics were to be put on the competitive market. The oil industry would be in the "unfair position of having to contribute through high taxes to competition against itself." There is a shortage of technical and operating man power. Huge chemical plants for catalyst manufacture would have to be constructed.
5. Whole new cities would have to be established near the plant sites,



Q "To talk about coal replacing gas and oil usage means . . . synthetic processes. But synthetic gas does not sound exactly right in the ear of the gas utility operator who has long been familiar with the more common term of 'manufactured gas.' But the plain fact is that the synthetic process, whether for making gas or oil, is based on the well-known, by now old-fashioned, technique of manufacturing gas from coal. In the case of synthetic oil the process has to be carried further."

PUBLIC UTILITIES FORTNIGHTLY

since much of our coal and oil and oil shale is in the semiarid regions of the West.

*W*HERE will synthetic plants be built, if they are built?

They will doubtless be built in an area where there is good coal supply. Curiously, perhaps, the areas now producing natural gas, such as Texas and Louisiana, do not have such supply and are far from the consuming markets. Manufacturing and chemical plants based upon gas made from poor-grade Texas lignite could not compete with plants in Illinois, Ohio, Pennsylvania, or West Virginia, adjacent to large deposits of good coal and close to large U. S. A. population centers.

Is a depreciation of pipe lines over the life of the predicted supply indicated?

The FPC seems to have adopted such a cautious policy in one of its recent decisions dealing with the maturity of bonds of a pipe-line company as compared with its formally committed supply. There is a chance that such lines could not be economically used after "cheap" gas has gone. Field prices of at least 20 cents per thousand cubic feet are being predicted in Texas before 1958. Such a high field price might eventually make even some existing pipe lines uneconomical to operate, if their dedicated gas reserves should fall short of the original estimates.



"THE public utility company—may I remind you?—is not only a commercial enterprise for profit, but also a corporate citizen. In both capacities it is peculiar in that it operates ordinarily without direct competition being the only source of supply available to most of its customers.

"These facts alone carry the presumption of interest on the part of the public in what the utility's attitude is, and what it tries to do, about any question concerning the community.

"Just as the service it renders is essential to the life and progress of the community, so the utility company as a business enterprise must realize that its fortunes are tied in with those of the community. It cannot grow unless the community grows; it must decline if the community declines."

—ALLEN L. BILLINGSLEY,
President, Fuller & Smith & Ross, Inc.

Washington and the Utilities



Nitrogen Removal Project

THE U. S. Bureau of Mines has estimated that the nitrogen nuisance is costing the natural gas industry millions of dollars. The bureau's report was made public in Washington early in September following a recent conference on the nitrogen removal problem held at Amarillo, Texas.

Nearly a hundred scientists and executives, representing the gas and petroleum industries, and government officials were on hand for the meeting. The specific agenda of the conference dealt with cooperative research by the American Gas Association and the U. S. Bureau of Mines on methods of nitrogen removal.

Nitrogen in natural gas corresponds to ash in coal. The nitrogen content of certain large reserves, such as in the Texas Panhandle and Hugoton, Kansas, fields, averages 10 to 15 per cent, and in other fields it is as high as 30 per cent.

"The presence of 10 per cent or more of nitrogen detracts appreciably from the heating value of the natural gas per unit volume," the bureau said.

The bureau said it recently installed an experimental nitrogen removal pilot unit at the Exell helium plant near Amarillo. The plant will investigate the low temperature of removing nitrogen by liquefying the gas.

It is estimated that about 4,000 tons of nitrogen per day are transported over an average distance of 800 miles, engineers revealed.

"It is also estimated that \$500,000,000 is invested in facilities to transport gas from these fields; and, assuming an average of 12 per cent nitrogen, about \$60,000,000 of this amount is devoted to

handling nitrogen, which won't burn," the report pointed out.

Navy Tackles Marsh Gas Synthetic

THE Navy is picking up where the Germans left off in the search for motor fuels that will relieve mankind's dependence on dwindling supplies of gas and oil. Working with secret formulas captured when scientific teams crossed the Rhine with American and British troops, the Navy is attempting to develop two new fuels from such common chemical substances as nitrogen, hydrogen, and methane, or "marsh gas."

Naturally reluctant to give information about anything that may some day have military significance, the Navy has announced only that work on hydrazine and a companion fuel, nitromethane, was under way. Hydrazine, a colorless, fuming, corrosive compound of nitrogen and hydrogen, is made from two readily available chemical elements—one in the air and the other in water. If a satisfactory fuel could be derived from hydrazine, man might no longer have to prod the earth for coal and oil.

Nitromethane, the second source of fuel being studied by the Navy, is a combination of nitrogen and the simplest of all the compounds of carbon and hydrogen, methane. Methane (CH_4), also called marsh gas and fire damp, is one of the simplest gaseous products of the decay of vegetable matter under water and is therefore a constituent of the gases that bubble up in the stagnant water of marshes. Methane is not the gas that causes hot-weather discomfort experienced in some residential areas located on

PUBLIC UTILITIES FORTNIGHTLY

or near tidewater swamps or river marsh. Methane is colorless and odorless.

METHANE is, however, an important element in sewage reduction process. An excellent fuel, it heats the buildings of some municipal sewage disposal plants and also the hot water that is circulated through the sewage digestion tanks. The Baltimore Bureau of Sewers, for example, obtains all the fuel it needs for heating purposes at its Back river and Patapsco river plants by the simple expedient of recovering the methane gas generated by "working" sludge.

The sewage disposal plants are the only public buildings in Baltimore that heat themselves at no expense to the public.

Methane is one of the gases evolved in petroleum wells and constitutes about 90 per cent of natural gas. Formed in the destructive distillation of organic matter, such as wood, coal, and vegetable growths, methane is also one of the principal constituents of everyday illuminating gas. When quantities of the gas mix with atmospheric nitrogen in coal mines, disastrous explosions frequently occur. It is this explosive combination of nitrogen and methane which the Navy apparently hopes to control and utilize for propulsion purposes.

Does Conservation Mean Monopoly?

THE serious question of whether coöperative efforts to conserve gas or oil should be considered a violation of Federal or state antitrust laws was raised at the annual meeting of the American Bar Association Section of Mineral Law. Robert E. Hardwicke, principal speaker at the section meeting, which was held in Seattle early in September, is of the opinion that such coöperative effort to prevent waste would not violate the spirit of the antitrust statutes, but he recommended the passing of legislation which would specifically exempt such coöperative activities from the threat of Justice

Department prosecution. Hardwicke outlined eight general conclusions:

1. The need for effective methods to prevent waste of oil and gas and protect correlative rights is greater than ever.

2. Regulation under state statutes has brought about great benefits, but new conditions have created new problems which are difficult to solve by the ordinary type of regulation or operations. The solution of such problems should be left to the states.

3. New efficient techniques require in many instances joint or unit operation of entire fields.

4. The making and carrying out of an agreement reasonably necessary for conservation or to prevent waste and protect correlative rights do not constitute a violation of a state antitrust statute of the usual type, but the passage of an act specifically authorizing such agreements would remove any fear or any basis for claim of fear for probable prosecution for making and carrying out such agreements.

5. If the making and carrying out of an agreement are reasonably necessary, on principle it should be immaterial whether the agreement and operations relate to a single pool or field, or to an area, or to the entire state.

6. Such action, whether or not authorized by state statute, does not violate the Federal Antitrust Act.

7. The Cotton Valley and "Mother Hubbard" cases may serve to clarify application of Federal antitrust laws to production operations.

8. Compliance by operators with an order or regulation of a state official or agency entered pursuant to a state statute does not constitute an agreement by the operators, and neither state nor Federal antitrust statutes are applicable.

Burst of Activity in Controversial FPC Cases

THE Federal Power Commission is evidently striving to commence and

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WASHINGTON AND THE UTILITIES

make as much progress as possible on a series of rate cases before the end of the year, after which the complexion of the commission might be changed with any shift in administration. Commissioner Buchanan, Pennsylvania Democrat, serving an interim appointment, would have to obtain a new appointment and confirmation from the 81st Congress if he is to remain in office after next January. That, in some quarters, is held to be an unlikely development.

Meanwhile, the Olds-Draper-Buchanan majority seems to be in control of the commission's policies on controversial matters. This was evidenced by the recent 3-to-1 decision in the First Iowa Hydro-Electric Coöperative Case, in which Chairman Nelson Lee Smith vigorously dissented. Commissioner Wimberly did not participate in that case, but in the past he has more generally agreed with Chairman Smith than with the Olds-Draper faction. In this decision the First Iowa Hydro-Electric Coöperative won an FPC license to build a power plant on the Cedar river near Muscatine, Iowa, following a long and bitter fight in which the co-op was opposed by the state of Iowa, two business-managed utilities, and several landowners.

Even so, the last probably has not been heard of the First Iowa Hydro-Electric Case. The state of Iowa and the FPC seem to be headed for another bout in the Federal courts. Neill Garrett, special assistant attorney general representing the state of Iowa, said "We will carry this matter to the United States Supreme Court if necessary."

The state claims that Cedar river is not a navigable stream of the United States and that the FPC has no power to approve the project over the state's opposition. It also questions the economic feasibility of the project. The co-op claims the cost will be \$18,500,000, but the state estimates the cost at \$29,500,000. The co-op struggle already has been going on for seven years. Its first application was made in 1941 and denied by the FPC in 1944. The present application was approved by Army Engineers.

ON the rate case front the FPC has suddenly ordered investigations into a series of rate schedules involving three natural gas companies and two electric power companies. The commission said that rates, charges, services, or classifications of the companies "may be unjust, unreasonable, unduly discriminatory, or preferential," and that an investigation is "necessary in the public interest." The companies involved include the big Panhandle Eastern Pipe Line Company, New England Power Company, Canadian River Gas Company, and the Colorado Interstate Gas Company.

One other important natural gas case in which the FPC has a lively interest may be decided by the U. S. Supreme Court in the fall term which opens this October. This case involves the question of whether or not one company's natural gas pipe lines should be made available to another company at reasonable rates fixed for the transportation of gas. The formal litigation lies between two gas companies, Montana-Dakota Utilities Company and Mondakota Gas Company. The former owns the pipe lines and the latter wants to use them.

Mondakota, supported by the FPC as well as the public utility commissions of both Dakotas, won its case in the eighth U. S. Circuit Court of Appeals at St. Louis. Montana-Dakota Utilities Company has now asked the U. S. Supreme Court for a certiorari to review the lower court decision. Inasmuch as this precise question apparently has not been passed upon heretofore, the chances of a review in the highest court seem to be good.

The FPC is going ahead with hearings on the New York state application to develop St. Lawrence power jointly with Ontario. The commission evidently will not be deterred by President Truman's reported opposition to the plan as being "piecemeal" development, because it does not include the seaway feature. Meanwhile, General Wheeler, chief of Army Engineers, has assured Senator Vandenberg, Republican of Michigan, that the power project will not interfere with an eventual seaway development.



Exchange Calls And Gossip

Courts Rule on Antistrike Laws

COURTS have handed down decisions on the constitutionality of state utility antistrike laws in New Jersey and in Michigan. The law was upheld in New Jersey. In Michigan it was invalidated on technical grounds. More than a dozen states have passed similar antistrike laws within the past few years.

The New Jersey case involved the New Jersey Bell Telephone Company. The court said the union had no inherent right to strike when it would cause great injury for the public and denied the company's contention that it had been deprived of its property without due process. Vice Chancellor Bigelow declared that the power of the state to prohibit a strike that would "interrupt the operation of a quasi public corporation exercised for the public good is probably as great as if title to the property were in the state and the employees were paid out of tax money."

The dispute resulted when the state seized the facilities of the New Jersey Bell in an effort to promote compulsory arbitration during last year's national telephone strike. The union, Communications Workers of America, independent, said it would appeal the decision to the New Jersey Supreme Court.

Chancellor Bigelow said that the company was not actually dispossessed and suffered no damage. "*Pro forma* seizure" was in the nature of "protective custody," he said. It was sufficient, nevertheless, the court held, to bring into operation the provisions of the statute requiring arbitration and forbidding a strike.

"Compulsory arbitration does not violate any constitutional rights of the tele-

phone company," the court held. He said that the company was a public utility entrusted by the state with public power to be executed for the public good under the principle of eminent domain.

COMMENTING on the company's contention that the antistrike laws delegate legislative powers to the board of arbitration, the court maintained that while definite standards for wages and conditions of employment were not specified, they probably were as definite as the subject matter permitted. He added that the statute did not delegate power to make a law.

In the case of Michigan, the state law was invalidated on the rather technical grounds that it imposed an unconstitutional duty of arbitration on the circuit judges of the state courts. That situation probably could be remedied, if the state legislature desires to revise the law.

Ferret Lays Wire

SOMETHING new in the way of a labor dispute is reported from the land down under, Auckland, New Zealand. The Electrical Workers' Union sued an Auckland concern on charges of unfair labor practices for employing a ferret to pull 600 feet of wire through a conduit.

The ferret was lured through the conduit, trailing the wire, by the scent of a rabbit at the other end. It is said that the trick saved the firm the cost of many weeks' work by electricians.

The union, according to a United Press report, charged the company with employing an unregistered worker, paying insufficient wages, and engaging an under-aged worker.

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EXCHANGE CALLS AND GOSSIP

Did Court Know?

REGULATORY commissions and the courts get into some real spirited arguments from time to time. Recently, in Mississippi, the chairman of the state public service commission ruled against including a chancery court decree authorizing emergency telephone rates as an exhibit in a hearing.

The chairman, Homer Casteel, said: "I sustain the objection because I consider the decree an affront to the commission, since I don't think the court knew what it was doing."

The commission had been conducting hearings to determine "just and reasonable" rates for the Southern Bell Telephone & Telegraph Company. The decree was offered in evidence by the company, and the assistant attorney general made the objection which the court sustained.

However, the court authorized rates which are to be in effect until "such time as just and reasonable rates may be fixed by the Mississippi Public Service Commission in the lawful exercise of its authority."

FCC Still Opposed to Give-away Shows

DESPITE a warning from a congressional committee, the Federal Communications Commission is going right ahead with its proposal to curb or outlaw radio programs whose principal appeal is through giving away large prizes. In fact, the commission has set a definite date to hear oral argument on its proposed ban.

FCC originally made public proposed rules covering what it called "lotteries and gift enterprises" on radio programs. In general, the rules would bar programs in which the giving of prizes is "dependent in any manner upon lot or chance." Then the House Select Committee to investigate the FCC pointed out that recent changes in the Communications Act had transferred specific authority to the Criminal Code, and hence any action would have to come from the Department of Justice.

Objection to this contention was voiced by FCC. It now claims that, instead of acting under the lottery section, it can adopt rules covering the conduct of stations. The commission has broad authority there.

The net result of this controversy was that FCC had to issue a supplemental order shifting the statutory basis for its original investigation of such program.

The Mutual Broadcasting network has decided not to wait for the FCC to tell it what to do about such shows. Mutual's president, Ed Kobak, said in a recent letter to the National Association of Broadcasters: "We don't need the FCC to tell us what is wrong with programs." To back up his contention, Mr. Kobak ordered "Three for the Money," a Saturday night give-away, revised to eliminate phone calls. He plans to confine the program to the studio audience. If the program suffers because of the loss of listeners, it will be removed from the air, he said.

AT&T Employees Offered Stock

THE American Telephone and Telegraph Company is offering employees of the Bell system the right to purchase about 1,400,000 shares of the company's capital stock at a price \$20 below the market. The market price to be used in determining the price to the employee will be when the employee's payment, through payroll deductions, is completed. The offering will be made some time in December.

The proposal is made in accordance with an employees' stock purchase plan authorized by shareholders in October, 1946, under which not more than 2,800,000 shares may be sold to employees. Since last fall, employees have been purchasing about half of the shares offered.

Under the plan, employees with three months' or more service on November 30th will be eligible to participate. There are about 663,000 employees in the company and its subsidiaries. Officers of AT&T are not allowed to participate in the plan.

PUBLIC UTILITIES FORTNIGHTLY

In the present offering, eligible employees may purchase one share of stock for each full \$500 of their annual basic rate of pay on November 30, 1948. These shares may be in addition to those which employees are buying under the first offering, except that no employee may purchase a total of more than 50 shares under both offerings. The monthly payroll deduction will be \$5 a share and interest will be credited on instalment payments at the rate of 2 per cent a year, compounded semiannually.

Proceeds from the sale of stock will be applied toward the system's expansion program and for general purposes. Last year, the company spent \$1,185,000,000 for new construction, compared with \$690,000,000 in 1946, and \$255,000,000 in 1945.

Western Electric a Utility?

THE state board of mediation of Missouri has before it the question of whether Western Electric Company is a public utility within the meaning of the King-Thompson Act, which prohibits public utility strikes in the state.

If the board finds that the company, wholly owned by AT&T, is a public utility, the state law can be invoked to force arbitration in the labor dispute between the company and the CIO Association of Communication Workers. The chairman of the board, Vance Julian, requested the union not to strike in Missouri and to delay any action in that state pending the board's hearing.

The union requested the determination because in this instance it desires to force compulsory arbitration to establish a wage increase which may be used as a pattern in other states.

AT&T Fee Reduced

A COMPROMISE has been reached on the controversial question of license fee payments to AT&T by subsidiaries. Beginning October 1st, the pay-

ments to the parent company by 22 associated companies will be reduced from 1½ per cent of the companies' gross revenues to 1 per cent.

The agreement was reached after extensive conferences between company officials and members of the special telephone committee of the National Association of Railroad and Utilities Commissioners. The change will result in a reduction from \$35,000,000 to \$24,000,000, on the basis of present revenues, in the amount paid annually to AT&T by the associated companies.

Some state commissions have held that the company should charge for its services to subsidiaries on the basis of actual cost. However, the company contends that it would be impractical to work out a method of payment on such a basis for each company. This substitute reduction should help to minimize the controversy.

Telephone Strike Averted

A LAST-MINUTE agreement on a wage increase for 25,000 telephone installers averted a strike called for September 17th. The dispute was between the CIO Association of Communication Equipment Workers and the Western Electric Company. Failure of settlement would have threatened to affect nationwide service and disrupt collective bargaining activities in the whole telephone industry.

Participating in the final agreement were Philip Murray, president of CIO, and Stanley Bracken, president of Western Electric. While the number of workers directly involved was relatively small as compared with the 700,000 employees of the entire Bell system, the CIO strategic position was strong because it threatened to picket exchanges in 43 states. There were indications that such picket lines would have been honored or observed by sizable groups of organized telephone workers.

The wage increases granted range from 8 to 15 cents an hour, an average of 11 cents an hour, or \$4.40 a week.

Financial News and Comment

By OWEN ELY



Progress and Prospects of the Gas Industry

WHILE the growth and prospects of the natural gas industry have been reviewed by a number of Wall Street firms in the past year or so, Moody's Service has issued perhaps the best summary:

No industry has gained more in investor popularity over the last few years than natural gas. This has no appearance of being a flash in the pan. The long-term outlook remains bright. . . . There is a very strong trend toward use of natural gas for space heating, particularly in the northeastern states, and more and more concerns are switching to the gas for industrial and utility boiler fuel. . . . The growing preference for natural gas as a fuel derives from both its efficiency and its cheapness. As to efficiency, its high heating content, cleanliness, evenness in handling, and freedom from residue are all contributors. . . . A favorable price position as against oil and coal has been held for the last five years and . . . will probably hold—though not at present spreads—for years to come. . . . With gas, so much that is consumed is on the basis of long-term price contracts made in previous years that only the recently made contracts reflect any important increase in the price. . . . Gas sales have a large "pent up" demand to satisfy before the growth curve begins seriously to taper off.

With regard to reserves, last year's estimates of 166 trillion cubic feet would, on the basis of net production of 5.6 trillion in 1947, be good for only about thirty years. However, in the past new reserves have been discovered faster than depletion has occurred, so that the

net available amount has continued to increase. Thus in the five years ended 1945, nearly four times as much gas was discovered as was produced; in the last two years the ratio was nearly 3 times. Further important discoveries are anticipated by experts.

As to regulation of the industry under the Natural Gas Act of 1938, the present Federal Power Commission policy still remains fairly liberal although the 6½ per cent rate of return allowed in past years has been cut to 6 per cent. The FPC's extensive investigation of the industry during 1944-6 (copies of which can be obtained free of charge) was constructive in that clarification rather than additional regulation was suggested.

However the FPC's attempt to extend its regulatory powers to the production of gas (instead of limiting them to interstate transportation) has been opposed by the industry. As a result, the Moore-Rizley Bill was passed by the House, but failed to pass in the Senate. This act would allow as "cost of operation" to the transportation company the market value of the gas in the field. Companies with substantial reserves might benefit considerably by curtailment of regulatory practices with respect to production. If Congress fails to pass this or some similar legislation, other combination producers-distributors may follow the lead of Southern Natural Gas in setting up separate subsidiaries to own gas reserves and distributing the stocks to their

PUBLIC UTILITIES FORTNIGHTLY

own stockholders, thus avoiding FPC regulation "at the well."

However, the FPC has adopted a liberal attitude toward the financing of new pipe-line companies. Recognizing the difficulty of raising venture capital under present conditions, new companies have been permitted to capitalize with equity ratios well below the so-called SEC limit of 25 per cent. For example, it is currently proposed to organize the new Trunkline Gas Supply Company as follows: senior capital 73.5 per cent; junior capital 9.5 per cent; and equity capital 17 per cent (the latter including preferred and common stocks).

SOME criticism of thin equity financing and promoters' "excessive profits" in the case of Texas Eastern appeared in the March issue of the *Harvard Business Review* ("Fair Profit?" by John W. Welcker). An interesting response to the Welcker story, and a constructive argument against the persistent view that high profits are innately evil, appeared in the July issue of the *Review*. Joseph Stagg Lawrence, former well-known journalist and now vice president of the Empire Trust Company, draws the following conclusion:

Bear in mind that these rewards, whether they are the fees of a great statesman and orator, the royalties of a playwright, the purse of a prize fighter, the capital increment of an investor, or the profits of a promoter, all emanate from that accolade which public judgment, functioning under conditions of freedom (with adequate safeguards against abuse), grants voluntarily. If the public wants to pay \$100 to see Joe Louis or \$9.50 to own a small fraction of Texas Eastern, who has the right, within the legacy of the freedom which this land still enjoys, to say that the choice is incompetent, that added legislation should be passed to prevent the public from making such decisions? Shall the verdict of a free market, qualified by consideration for the general welfare, discover adequate sanction in its own unconcoerced and fully informed judgment, or must this be referred to captious critics who at best have only an indirect interest in the decision?

Great profit realized over a short period of time in response to aleatory and acquisitive appetites imposes a severe strain upon our tolerance. Yet men must be encouraged to assume such risk without the fear that

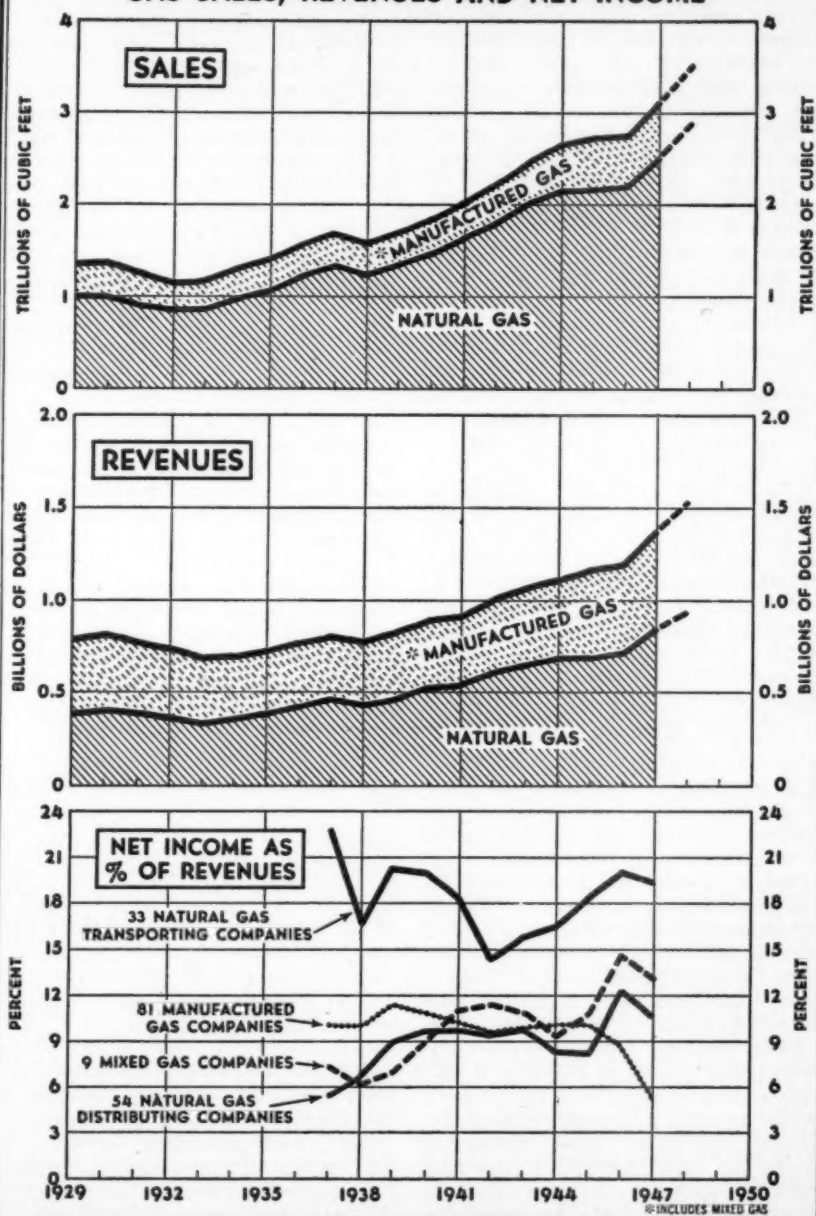
they will be vilified if they are successful. If such ventures are suppressed by unfair public treatment, we may regard as confirmed that decline in capital which the experience of the last seventeen years indicates.

Our accompanying chart gives the historical perspective of the entire gas industry since 1929. While the figures used do not include the entire output of natural gas (a large proportion of which is wasted or used locally), the chart indicates the relative growth of the two main divisions of the industry. In 1929 production totaled 1.35 trillion cubic feet, of which natural gas contributed nearly three-quarters and manufactured gas one-quarter. This year it is estimated that over 3.5 trillion cubic feet of gas will be marketed (excluding local field use, carbon black, etc.), of which natural gas will supply 82 per cent and manufactured 18 per cent. The latter percentage also includes some natural gas, since mixed gas sales have been included with manufactured gas. (Mixed gas accounts for nearly one-quarter of the total assigned to manufactured gas, but use of mixed gas is declining in favor of straight natural gas.)

IN terms of revenues, the two sections of the industry started out on about an even basis in 1929, each having about \$390,000,000. Now, however, natural gas contributes some 61 per cent of total revenues, and manufactured and mixed gas 39 per cent. With the present rapid increase in construction of pipe lines, natural gas is expected to obtain a still larger share of the industry total, particularly when gas is brought to the New York and New England areas. However, most manufactured gas facilities doubtless will be retained either for production or stand-by purposes.

The growth of natural gas has, of course, been limited by the ability to obtain steel pipe for the construction of new pipe lines, the building of additional loops and distribution facilities, etc. The large number of pipe-line construction projects now pending also must be funneled by the natural gas industry through the Federal Power Commission, which

GAS SALES, REVENUES AND NET INCOME



PUBLIC UTILITIES FORTNIGHTLY

may retard them somewhat. However, during the first half of 1948 the Federal Power Commission authorized facilities designed to add over 800,000,000 cubic feet of daily delivery capacity, and involving over 3,500 miles of new pipe line. For the larger projects costing \$700,000 or more, the estimated cost of these additions is \$233,000,000. The major projects are expected to benefit 70 cities of 50,000 or more population in 12 states and the District of Columbia, as well as numerous smaller communities. These cities are located as follows: Alabama 2, District of Columbia 1, Georgia 3, Illinois 7, Indiana 7, Kentucky 3, Michigan 7, New Jersey 11, New York 5, Ohio 12, Pennsylvania 6, Tennessee 3, and West Virginia 3.

The largest recent authorization was for construction by Trans-Continental Gas Pipe Line Company of a line from Texas to New York city, designed to deliver 340,000,000 cubic feet of gas daily to utilities in New York, Pennsylvania, and New Jersey. Of this amount 100,000,000 cubic feet will go to Consolidated Edison, for mixing with manufactured gas, thus relieving an expensive "bottleneck" for that company. (See story by Ernest Abrams in *Barron's* for September 13th.) Brooklyn Union Gas will also benefit.

DURING the fiscal year ending June 30, 1948, certificates were issued by the commission covering a total of 8,468 miles of pipe line and installation of compressor units with 531,000 horsepower, at an estimated cost of \$520,000,000. While figures for the electric industry are not available for the same period of time, that industry is currently spending an average of about \$1.5 billion a year, which seems about in proportion to the respective size of the industries.

Since 1942 the Federal Power Commission has authorized a total of 20,456 miles of natural gas pipe line and 1,254,000 horsepower of compressor capacity. Thus the mileage and capacity authorized during the fiscal year ended June 30th represent about 42 per cent of the total authorized in six years, indicating the

accelerated growth of the industry.

One of the latest projects to be placed before the Federal Power Commission is the Trunkline Gas Supply Company, which would spend an estimated \$109,000,000 to construct a line north from the Louisiana and Texas fields to supplement the present inadequate supplies of major transmission lines now obtained from the Mid-Continent and Hugoton fields. Systems thus served would be those operating in the Middle West and might include Northern Natural Gas, Panhandle Eastern Pipe Line, and Natural Gas Pipeline Company of America (supplying Chicago). However, another line, the Gulf Coast Northern, is also projected, with a similar objective, so that the situation is not yet clarified.

In the present rapid expansion of the pipe-line industry it is inevitable that some competition or overlapping of plans should develop. Thus the respective domains to be serviced by the eastern lines (Tennessee Gas, Texas Eastern, Texas Gas, and Trans-Continental) have not all been completely worked out as yet. There is also some confusion as to overlapping of the new lines to serve the southern seaboard area (projects sponsored by United Gas and Southern Natural Gas, respectively).

To describe all these new projects in detail would be beyond the scope of this review. A pipe-line project is comparatively simple—purchase contracts are made at one end, and sales contracts to distributing companies at the other. Since there are almost unlimited supplies of natural gas in Texas, and since most gas distributing companies are "crying" for additional gas, the problem is largely that of arranging financing, taking care of the legal details before the Federal Power Commission and other regulatory bodies, and obtaining the necessary pipe, machinery, and right of way.

It may be of interest to compare the growth of the gas industry with that of the electric industry, which has been handicapped in somewhat less degree by delays in installing new facilities:

FINANCIAL NEWS AND COMMENT

	Gas		Electricity			
	Sales ¹	Rev. ²	Unit Rev. ³	Sales ⁴	Rev. ²	Unit Rev. ⁵
1929	1.35	\$7.8	58¢	75	1.94	2.57¢
1940	1.84	8.8	48	119	2.44	2.06
1947	3.11	1.37	44	218	3.85	1.77
Increase 1929-40	36%	13%	D 17%	59%	26%	D 20%
1940-47	70	56	D 8	84	58	D 14

D—Decrease. ¹—Trillions C.F. ²—Billions of dollars. ³—Cents per MCF (revenues divided by sales). ⁴—Billions of kilowatt hours to "ultimate customers." ⁵—Cents per kilowatt hours.



It is rather interesting to note that while electricity outstripped gas during the period 1929-40, the gain in revenues during 1940-47 has been almost the same for the two industries. Electric rates have shown a larger reduction in both periods than gas, probably due to greater operating economies and stricter regulation. (Part of the natural gas industry is unregulated with respect to earnings.)

As regards the rate of return earned by the two kinds of utilities, it is estimated that the natural gas companies in 1946 (latest available) earned about 7.6 per cent from gas operations alone and about 7.8 per cent from miscellaneous utility operations. The electric companies in the same year earned about 6.9 per cent on all utility operations. (The estimated rate base in each case has been increased about 5 per cent to make allowance for working capital.) Complete data on write-offs are not available for the natural gas industry, but for the electric industry the rate of return would be *substantially* lower if plant account had not been sharply written down in recent years, or if plant cost should be restated on the basis of reproduction cost less depreciation.

July Electric Earnings Show Upturn

NET income for all class A and B privately owned electric utilities in the month of July showed an increase of 9.1 per cent over last year, a surprisingly good showing as compared with the previous two months when net was down 4.4 per cent and 7.6 per cent, respectively.

However, for the first seven months net income remained 2.9 per cent under last year; and for the twelve months ending July the decline was 1.2 per cent.

The most interesting part of the July report is the contrast in the percentage gains for kilowatt-hour sales and revenues, for the same kind of service:

	KWH Sales	Revenues
Residential service	15.0%	13.4%
Commercial service	14.7	15.0
Industrial service	10.4	14.8
Other sales	2.7	7.6
Total sales to ultimate consumers	10.9	13.7
Sales to other electric utilities	4.9	25.0
Total sales	9.7	14.7

Judging from these percentages of increase, average residential rates continue below last year (possibly because of low promotional rates for the larger quantity consumed). Commercial rates appear to average slightly higher, while industrial and miscellaneous are definitely higher. There is quite a remarkable variation in the "sales to other electric utilities"—it looks as though rates have been jacked up sharply for some of this intersystem business, but of course there may be other explanations. On total sales, revenues gained 14.7 per cent against an increase in output of only 9.7 per cent, indicating a substantial advantage in the over-all rate structure. This advantage enabled the utilities to show a gain in electric operating income of 7.4 per cent; though due to much smaller income from miscellaneous operations, gross income was up only 6 per cent. Interest charges jumped 13.5 per cent

PUBLIC UTILITIES FORTNIGHTLY

due to the construction program, but the increase was more than offset by a sharp decline in amortization and other deductions, so that total fixed charges were slightly lower than last year—thus permitting the 9.1 per cent gain in net income.

THIS unusually large increase seems unlikely to continue. Fuel costs may again be affected by recurring drought conditions, and amortization items are always an uncertain factor. However, it seems generally anticipated that moderate gains in the second half of the year (due to economies from new generating plants) will offset the decline in the first half.

Jay Samuel Hartt's Utility Ratios

JAY SAMUEL HARTT, well-known Chicago consulting engineer specializing in the valuation of utility properties, has again published his useful annual survey of utility common stocks, comprising nearly 100 large pages of tabular material. As each page contains over a hundred items, this means about 10,000 key figures, ratios, and per share amounts. This year's edition has been considerably enlarged to include (a) companies whose common stocks had not previously been in the hands of the public, and (b) 26 holding companies. Earnings are for the year 1947 and price-earnings ratios are

based on market prices prevailing in June, 1948.

The publication includes the stocks of all operating public utility companies which have regularly quoted market prices, while the holding companies listed exclude those in process of liquidation. Data for various stock groups are presented in the following order: electric, gas, telephone, water, bus, street railways, and holding companies. Stocks in each group are arranged in the order of their price-earnings ratios.

Altogether 233 companies are included. Combined averages and ratios are presented on pages 4-5 for the various groups—117 electric companies, 53 gas companies, 7 telephone companies, 6 water companies, 12 bus companies, and 12 street railway companies. Selected group ratios which seem of special interest are shown in the accompanying table.

WITH respect to average yields on common stocks, these are lower than the figures presented in our own tables (pages 517 and 518), possibly because the Hartt averages include some nondividend paying companies, and also because 1947 dividend figures are related to 1948 prices. The practical value of some of the dividend yield figures also seems open to question, since the average 1947 dividend rate is used. Thus no adjustment is made for changes in dividend rates made in the year and a half since January 1, 1947.

	<i>Electric</i>	<i>Gas</i>	<i>Tele- phone</i>	<i>Water</i>	<i>Bus</i>	<i>Street Railways</i>
Gross Plant Per \$1 of Revenue	\$3.95	\$3.72	\$3.41	\$8.14	\$.95	\$2.33
Common Stock Equity, % of Capital	38%	46%	60 %	40%	77%	43%
Deprec. Reserve, % of Plant Account	22%	24%	33 %	17%	44%	33%
Deprec. Accrual, % of Plant Account	2.2%	2.5%	4.5 %	.9%	5.4%	—
Deprec., Maintenance, and Amortiza- tion as % of Revenues	17%	14%	36 %	—	—	—
Taxes, % of Revenue	18%	16%	10 %	24%	15%	8%
Gross Income, Ratio to Net Plant ..	6.1%	7.5%	4.4 %	4.5%	13.9%	2.6%
Fixed Charges—Times Earned	3.9	5.9	3.2	3.1	9.3	1.6
Fixed Charges and Preferred Divi- dends—Times Earned	2.6	4.9	3.1	2.4	9.3	1.0
Common Dividends, % of Balance Available	51%	51%	102%	65%	83%	—
Common Stocks—Average Price- earnings Ratio	11.8	12.2	21.6	12.4	9.1	92.1

OCT. 7, 1948

FINANCIAL NEWS AND COMMENT

RECENT FINANCIAL DATA FOR PRINCIPAL ELECTRIC OPERATING COMPANY STOCKS

	9/15/48 Price About	Indicated Dividend Rate	Approx. 12 Mos. Yield	Share Ended	Current Period	Previous Period	Per Cent Increase	Earnings Ratio
<i>Revenues over \$50,000,000</i>								
B Boston Edison	41	\$2.40	5.9%	Dec.	\$2.75	\$2.53	9%	14.9
S Cleveland Elec. Illum.	39	2.20	5.6	June	2.65	2.63	1	14.7
S Commonwealth Edison	26	1.40	5.4	June	1.81	2.09	D14	14.4
S Consol. Edison of N. Y. ..	24	1.60	6.7	June	2.06	1.80	14	11.7
C Consol. Gas of Balt.	64	3.60	5.6	June	4.43	5.73	D23	14.4
S Consumers Power	35	2.00	5.7	July	2.75	2.99	D8	12.7
S Detroit Edison	21	1.20	5.7	July	1.39	1.64	D15	15.1
C Duke Power	77	4.00	5.2	Dec.	6.29	8.17	D23	12.2
S Pacific G. & E.	34	2.00	5.9	June	2.26	2.32	D3	15.0
S Penn Power & Light	18	1.20	6.7	July	2.16	2.06	5	8.3
S Philadelphia Elec.	23	1.20	5.2	June	1.62	1.85	D12	14.2
S Pub. Service E. & G.	22	1.60	7.3	April	2.05PF	—	—	10.7
S So. Calif. Edison	29	1.50	5.2	June	2.01	2.05	D2	14.4
Averages			5.9%					13.3

Revenues \$10-\$50,000,000

O Atlantic City Elec.	17	\$1.20	7.1	July	\$1.35	\$1.44	D6	12.6
S Birmingham Elec.	10	—	—	July	1.03	1.86	D45	9.7
S Carolina P. & L.	30	2.00	6.7	July	3.17	3.17	—	9.5
S Central Hudson G. & E. ..	8	.52	6.5	June	.48	.57	D16	16.7
O Central Illinois P. S.	14	1.00	7.1	June	1.78	1.92	D7	7.9
O Central Maine Power	17	1.20	7.1	July	1.13	1.69	D33	15.0
S Cincinnati G. & E.	29	1.40	4.8	June	1.97	2.09	D6	14.7
S Columbus & S. Ohio Elec. .	42	2.80	6.7	June	4.12	4.23	D3	10.2
O Connecticut L. & P.	57	3.25	5.7	July	3.61	3.34	8	15.8
S Dayton P. & L.	29	1.80	6.2	June	2.24	2.46	D11	12.9
O Delaware P. & L.	16	1.00	6.3	June	1.57	1.70	D8	10.2
S Florida Power Corp.	15	1.00	6.7	June	1.55	1.65	D7	9.7
S Gulf States Util.	17	1.00	5.9	July	1.65	1.59	4	10.3
C Hartford Elec. Light	51	2.75	5.4	Dec.	2.90	2.97	D2	17.6
S Houston Lighting	44	2.00	4.5	July	3.56	2.55	40	12.4
S Illinois Power	27	2.00	7.4	June	*2.90	*2.76	5	9.3
S Indianapolis P. & L.	24	1.50	6.3	June	2.66	3.66	D27	9.0
O Interstate Power	7	.60	8.6	Dec.	.95 Est.	—	—	7.4
O Kansas Gas & Electric	25	1.60	6.4	June	2.32	2.81	D17	10.7
S Louisville G. & E. (Ky.) ..	24	1.60	6.7	June	2.37	1.98	20	10.1
O Minnesota P. & L.	27	2.20	8.1	Dec.	3.40	2.88	18	7.9
O No. Indiana P. & S.	16	1.20	7.5	June	2.04	2.03	—	7.9
S Ohio Edison	33	2.00	6.1	June	3.15	3.11	1	10.5
S Potomac Elec. Power	13	.90	6.9	June	.86	.81	6	15.1
S Pub. Serv. of Colorado	37	2.20	5.9	June	4.73	4.83	D2	7.8
O Pub. Serv. of Indiana	43	Stock	8.9	June	4.93	4.49	10	8.7
O Pub. Service of N. H.	24	1.80	7.5	June	1.55	2.20	D30	15.5
O Puget Sound P. & L.	14	.80	5.7	June	1.75	1.77	D1	8.0
O San Diego G. & E.	14	.80	5.7	June	1.04	.92	13	13.3
O Southwestern Pub. Serv. ..	28	1.80	6.4	July	2.63	2.13	23	10.6
C Utah Power & Light	22	1.40	6.4	July	2.43	2.48	D2	9.1
S Virginia Elec. Power	17	1.20	7.1	July	1.47	1.68	D13	11.6
S Wisconsin Elec. Power	16	1.00	6.3	June	1.65	1.83	D10	9.7
O Wisconsin P. & L.	14	1.12	8.0	June	1.79	1.89	D5	7.8
Averages			6.7%					10.3



What Others Think

AGA Publications



ONE must actually see and read the various publications of the American Gas Association to realize the extensiveness and the quality of the work being done by that organization. In this particular office there is what is called by some in our group an "emergency vertical file." In reality, it is a pile of recent publications stacked high on a handy table. From this pile we now extract the first five AGA publications as we pass through, without thought of selection. They are:

1. "Steel Requirements for the Gas Utility Industry."
2. "Research Progress and Plans of AGA."
3. *AGA Monthly*.
4. "Midyear Report for PAR Plan."
5. "AGA Annual Report, 1947."

No attempt will be made to review even a sizable portion of the material presented, but here are a few high lights and impressions:

"Steel Requirements for the Gas Utility Industry" is a 28-page illustrated booklet containing background information concerning the urgent need for steel by the gas industry. It deals primarily with steel requirements for distribution facilities, plant structures, and equipment for utilities serving natural, manufactured, and mixed gas. Another and separate report relates to steel pipe needed for natural gas gathering and transmission facilities. Detailed statistics based on actual surveys are given.

"RESEARCH PROGRESS AND PLANS OF AGA" gives the background and progress to date on this important program. Nearly one and a half-million dollars have been spent on research by the AGA in the past three years. Authorizations already have been made for more than \$400,000 of such work in 1948 and

contemplated additions may bring the total above the half-million mark.

These expenditures, financed through voluntary contributions from member companies, make the industry a leader in cooperative efforts to overcome problems and point the way toward greater progress. The research projects cover a wide range of investigation. The four major categories are gas production, general technical, domestic gas, and industrial and commercial gas research. This 24-page booklet is generously illustrated and should be of interest to all users of gas and persons or organizations contemplating investment in the gas industry.

AGA Monthly is well known and widely circulated. Therefore little comment is needed here. The publication keeps the industry informed on current developments. For example, the June issue reports the progress of a water-heating campaign briefly as follows: More than 127 gas utilities have purchased materials offered by the promotion bureau of AGA for the campaign, and many others are participating in the campaign and preparing their own materials at the local level. In virtually every case, plumber-dealers are tied into the campaign in a thorough and aggressive cooperative plan to make every possible sale. Major features of most utility programs for the activity include a schedule of frequent newspaper insertions, radio spot announcements, plumber-dealer meetings, and full window and floor display in stores.

"MIDYEAR REPORT FOR PAR PLAN." The PAR (promotion, advertising, research) committee of AGA reports in that publication the financial status of the program and makes comments on the work being done and

PUBLIC UTILITIES FORTNIGHTLY

planned for the future. The extent of the activities of the association is indicated by estimated expenditures for the 1947-48 fiscal year:

National Advertising	\$752,772
Promotion	313,419
Research	750,592
Miscellaneous	30,000
	<hr/>
	\$1,846,783

How these expenditures are reflected in specific activities and research projects are explained in interesting fashion. The 40-page report is divided into five parts, two dealing with advertising and promotion activities and three with various types of research.

The research projects vary in scope from the evaluation of the oxygen-steam-carbon reaction and studies of high intensity gas combustion (a long-range project), to numerous projects on the combustion and operating characteristics of ranges and other domestic appliances. There have been some 38 reports and bulletins released during the past three and one-half years, and it is expected that the frequency of these will be accelerated in the future.

With respect to promotional activities, the report states that a gross of \$556,776 was expended during the first three years of operation of the association's new promotional plan. The activities embarked upon during that period, before appliances were generally available, were largely of a preparatory and educational nature. Several of the principal projects, such as the motion picture "Winning Seals of Approval," booklets on "Hot Water Magic," "Food Is Fun," "Automatic Gas Cookery," and "History of Gas," are still available and are being purchased and used throughout the industry.

National advertising is now in its fourth year as a major part of the PAR program. It is continuing to use the advertising pages of some of America's most influential magazines and business papers to carry two coincident but separate campaigns. One is directed to the domestic uses of gas, and the other to industrial and commercial uses.

"AGA ANNUAL REPORT, 1947." This 28-page report containing pictures, charts, text, and statistics can hold



RECEIPTS

<i>Membership Dues</i>		
Utility Companies and Individuals	\$594,951.17	
Manufacturers and Gas Appliance Manufacturers Association Service Payment, etc.	23,008.08	
	<hr/>	\$ 617,959.25
<i>Subscriptions</i>		
By Gas Companies to Research and Promotion and National Advertising		1,582,373.31
<i>Laboratories</i>		
Appliance Testing and Inspection Revenue Paid by Manufacturers	312,955.23	
Miscellaneous	21,426.94	
	<hr/>	334,382.17
<i>Sales of Publications and Material</i>		
General	71,905.33	
National Advertising	2,642.97	
Promotion Bureau	36,668.56	
	<hr/>	111,216.86
<i>Other Receipts and Refunds</i>		13,969.52
<i>Awards</i>		
Trust Fund Receipts		7,198.75
<i>Total Association Receipts</i>		<hr/>
		\$2,667,099.86

OCT. 7, 1948

WHAT OTHERS THINK

its head high in any company. It leaves the reader with the impression of high-quality stewardship, well-organized activities, extensive support from the industry, unusual scope of interests, and rapid progress of gas utilization.

Few people outside of the industry probably realize that the AGA receives and spends nearly \$3,000,000 a year. A breakdown of the receipts of the association for the year ended September 30, 1947, is most revealing because it shows the general support of the industry and

it indicates the principal interests of the groups involved. This portion of the complete financial statement is reproduced on page 520.

The wide distribution of such publications should convince the consuming and investing public that the industry has established new high operating levels and that progress promises to continue at a rapid but sound rate. The association demonstrates in many ways that it has faith in the future of the gas industry.

—G.M.W.

Natural Gas Price and Supply

NATURAL gas will continue to be in short supply until the rates charged are brought into better balance with the prices of coal and fuel oil. This is the personal view of Edward Falck, consulting engineer, Washington, D. C. In a short and concise report of five typewritten pages, Mr. Falck has put in unmistakable language his analysis of the supply and price situation of the natural gas industry.

The title of the report does not do it justice. It is called "Long-distance Transmission of Natural Gas to the Appalachian Area," and it was prepared for presentation at the spring meeting of the eastern district of the American Petroleum Institute, division of production, at White Sulphur Springs, West Virginia, early in July.

Discussing the price angle, Mr. Falck said:

... Earlier this year I prepared a study of gas, coal, and oil prices for central house heating and for industrial use. This study was prepared for the Independent Natural Gas Association of America. It showed that at the domestic level there had been very substantial increases in the price of coal and fuel oil in all of the major cities, whereas natural gas prices had generally remained the same, and in some instances had declined.

At the industrial level the same trends were indicated. In all cities there had been substantial increases in coal and oil prices whereas in the majority of the same cities the average price of natural gas for industrial purposes had declined. Even in the few

cities where natural gas prices had increased, the increase in the price of coal and oil was very substantially greater. In all cities for which gas and oil price data were shown, with few exceptions, gas was currently cheaper than oil, and there were many cities in which gas was cheaper than coal without making any allowances for the greater efficiency in combustion that is possible with the use of gas.

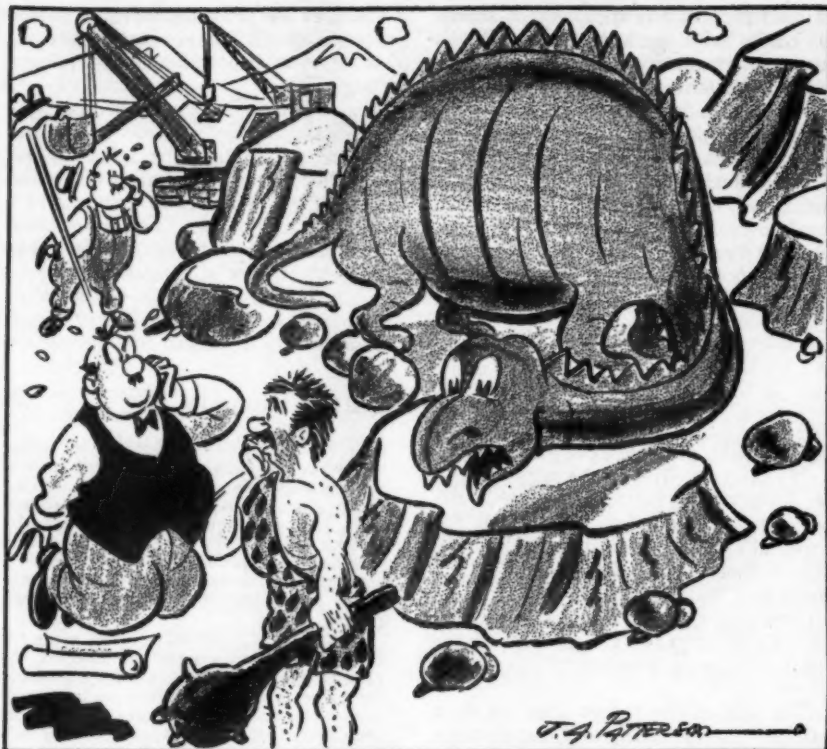
Furthermore, if allowances were made for cost of coal or oil storage and handling, the price of gas would be relatively even more favorable. These figures are fundamentally competitive and there are many requirements for energy that can be satisfied equally well by burning either coal or oil, or natural gas. Of course, there are some uses for which one or another of these fuels may be specifically required, and there are many factors other than price which will lead a consumer to prefer one fuel as against the others. Nevertheless, it is only obvious that consumers will convert from coal or oil to natural gas if the latter fuel is available to them at substantially lower cost. *This is now happening and it is like a run on the bank. Most natural gas companies and gas utilities are not able to take care of the demands that are being made on them. (Italics ours.)*

MR. FALCK is definite in his contention that no matter how fast natural gas production does increase, it will never catch up to demand if the disparity between its price and the price of other fuels is not eliminated.

Quoting a few figures on the supply situation, he said:

According to the figures published in the

PUBLIC UTILITIES FORTNIGHTLY



"LET ME GET THIS STRAIGHT—YOUR CLEARING FOR A NATURAL GAS PIPE LINE HAS GOTTEN AHEAD OF YOUR EXPLORATORY SURVEY?"

"Minerals Yearbook, 1946," the grand total annual energy supply in the United States for 1946 is estimated at approximately 33,000 trillion Btu. The total production of natural gas for 1946 amounted to 5,199 trillion Btu, or 15.7 per cent of the total national annual supply of energy. In 1937, natural gas production was only 2,588 trillion Btu, or 10.6 per cent of the national total. It will be seen that natural gas production increased by over 100 per cent from 1937 to 1946, whereas the total annual supply of energy increased by only 36 per cent.

It is clear that natural gas output will continue to increase faster than the total national energy supply.

Of necessity, Mr. Falck leaves the problem there because to pursue it further would involve delving into economic and political philosophy and its accompanying crystal-gazing headaches.

OCT. 7, 1948

A violent inflation or a drastic depression or a war would inject new factors not easy to analyze. The present situation makes this a fair gamble.

However, on the subject of war, Mr. Falck does mention two thoughts. He believes that there is an opportunity for representatives of the gas industry and government to work together constructively in connection with the problem of mobilizing the country's industrial fuel resources.

Mr. Falck suggests that possibly we should consider the desirability of substituting natural gas for liquefied petroleum fuels and in this way release them for military and other vital uses in time of war.

—G. M. W.

WHAT OTHERS THINK

Flaring of Natural Gas

IN the popular mind, the venting and flaring of natural gas in the air is a bad and uneconomic policy. D. A. Hulcy, president of the Lone Star Gas Company, Dallas, Texas, has done much to clear away popular misconceptions regarding the actual facts of the situation. Further spreading of his pronouncements should be helpful. In May of this year, Mr. Hulcy delivered an address entitled "Progress in Natural Gas Conservation," before the natural gas department, American Gas Association, in Houston, Texas. He covered all of the most important aspects of natural gas conservation, such as sources of supply, spacing of wells, pooling of producing properties, and the venting of casing-head gas in connection with the production of petroleum.

A few pertinent excerpts regarding the venting of gas are quoted below:

... In the Panhandle field of Texas prior to the year 1934 there existed a situation of inadequate pipe-line demand for gas and a far from uniform distribution of the demand which existed. Under the pressure of this situation, legal basis was established in Texas for the procedure of blowing gas into the air after the extraction of natural gas-oil. This practice was followed by many operators who had no markets for their gas with the result that hundreds of billions of cubic feet of gas were wasted. And the wastage was stopped as a practical matter only as a result of the establishment of healthier and more nearly complete pipe-line markets. ... This practice, as a problem of the petroleum industry, has received a great amount of attention particularly during recent months and scarcely less attention has been devoted to measures designed to reduce the amount of this venting by means of gas transporters taking and utilizing this gas.

There is no doubt that the gas transporter may utilize casing-head gas under proper circumstances and that it is to his advantage to do so. It is true, however, that in much of the discussion which has been had about means of persuading or requiring the transporter to take casing-head gas, there has been a tendency to minimize the fact that this gas belongs to the producer and is vented by him as a pure incident to the production of oil which is the matter of primary concern to him. ...

It is likely that the problem of vented

casing-head gas assumes larger proportions in the state of Texas than in any other state. Current data furnished by the railroad commission of Texas reflect that there is a total daily average production of casing-head gas in Texas in the amount of over 3 billion feet and that 47.17 per cent of this gas is vented to the air. This situation presents a fertile field for endeavor on the part of the oil operator to undertake conservation measures in a primary sense to curtail the venting by every possible means and it also provides the opportunity for gas pipeline companies to conserve in a secondary way by means of taking this gas in any case where at all feasible.

MR. HULCY contends that emphasis on this problem may lead to a failure to "fully appreciate the truly tremendous strides which have been made in over-all, nation-wide natural gas conservation."

He explains as follows:

... In the first place, the venting of casing-head gas is not a nation-wide problem but is limited to those areas where geography and other considerations, including large volumes of necessary oil production, make it impossible at the moment for all casing-head gas to be utilized.

In the second place, conservation of natural gas as it is produced from gas wells has reached a state of perfection on a nation-wide basis which would have been considered unattainable no more than fifteen years ago.

Finally, there has been remarkable accomplishment in the realm of processing natural gas for the recovery of liquefiable constituents. The 442 plants of one type or another which were operated during the year 1947 in this country to recover liquid hydrocarbons from natural gas, produced more than 5½ billion gallons of liquid products during the year. This was an increase of over 14 per cent as compared with the year 1946. This is an attainment of considerable magnitude in the matter of conservation of natural gas in the large sense and the prospects for the future in this realm of the business are even more impressive.

Mr. Hulcy concluded that the industry may well be proud of past accomplishment in natural gas conservation and should approach with great confidence the task of further perfecting practices of conservation in regard to natural gas.



The March of Events

In General

Proposed Natural Gas Cost Boost Suspended

A PROPOSED increase of more than 10 per cent in the cost of natural gas furnished to Mississippi River Fuel Corporation, which supplies the gas for St. Louis industries, has been suspended by the Federal Power Commission, pending a hearing October 18th.

The rate advance was announced by Interstate Natural Gas Company, Inc., of Monroe, Louisiana, to apply to natural gas sold by it to Mississippi River Fuel Corporation, to Texas Gas Transmission Corporation of Houston, and to Southern Natural Gas Company of Birmingham, Alabama.

The commission said the proposed increases would amount to \$130,700 during the 12-month period. It stated that the company had not shown justification for the increases, and that the increased rates might be "unjust and unreasonable."

Northwest Must Get Natural Gas

NATURAL gas from Alberta or Wyoming is the only hope of the gas industry in the Pacific Northwest, N. Henry Gellert, president of the Seattle Gas Company, told delegates to the Pacific Coast Gas Association convention at Santa Cruz, California, last month.

Gellert, who was nominated for vice president of the association, pleaded for political support from all Pacific coast states to help obtain natural gas.

Although a company has been organ-

ized to pipe natural gas from the Alberta fields to Puget Sound, Canadian authorities have not yet issued the necessary export permits.

Natural gas also is available in Wyoming but the size of the reserves has not yet been ascertained, Gellert said.

"If there should be a wholesale collapse of the manufactured gas industry the growth of the Pacific Northwest is certain to be stunted," Gellert added. "Great industries do not move to areas not served with gas; some cannot operate without it."

Dewey Endorses TVA

REPRESENTATIVE John Jennings, Republican of Tennessee, has released a letter from Governor Thomas E. Dewey of New York "enthusiastically" endorsing the Tennessee Valley Authority but not recommending the "central authority" system for development of resources in other parts of the country.

In the letter, as read by Mr. Jennings last month in a broadcast, the governor wrote:

The TVA has done an essential and magnificent job of providing hydroelectric power to a great area. I believe in it and wholeheartedly and enthusiastically endorse it.

In other sections of the country there are better means of developing their resources than through a central authority. I believe that the people affected by vast public power developments have a right to personal representation in the management which the authority system does not permit.

This may be the foundation for the false rumors you may have heard, and you are wholly at liberty to publish all or any part of this letter.

THE MARCH OF EVENTS

Mr. Jennings said he had written to Mr. Dewey that a whispering campaign was being carried on "to the effect that if the Republicans should hold control of the next Congress and Dewey is elected President such a victory would be prejudicial to the TVA and the continued prosperity of Tennessee."

Cut in Midwest Gas Supply Upheld

SIX midwestern utility companies were directed on September 17th by the Federal Power Commission to accept a 50 per cent cut in certain gas deliveries from the Panhandle Eastern Pipe Line Company. The commission said it had been advised by Panhandle that the cur-

tailment in deliveries would be effective on September 20th. It applies to interruptible loads east of the company's Glenarm pressure station in central Illinois.

Interruptible sales are those made to companies on the basis of supplying them with gas when it is available.

The commission said that on the basis of a study of Panhandle's operating data, it felt the cut back was necessary. It added that it "will expect compliance." The cut will affect utilities in other states as well as in Indiana and Illinois.

A copy of the FPC notice was sent to state regulatory commissions of Michigan, Ohio, Indiana, Illinois, Missouri, and Kansas.

Arizona

Gas Plea Rejected

RESIDENTS of Prescott, by a vote of 893 to 527, last month refused to grant a city natural gas franchise to the Arizona Power Company.

The power company's franchise application was accepted by the city council—subject to the September 11th vote—on July 27th. The council's approval was given following consideration of applications by both the Arizona Power Company and the Southern Union Gas Company, a Texas firm.

The Arizona Power Company is present holder of a franchise to furnish manufactured gas to Prescott. The present 50-year franchise will expire in 1952.

Applications from both utility firms were received by the city council this spring soon after announcement was made that a natural gas line is to be built from the Four Corners area in New Mexico, passing through and serving northern Arizona, into the state of California.

Arkansas

Gas Association Delays Action

DIRECTORS of the East Arkansas Natural Gas Consumers Association recently reelected Mayor Ben Butler of Osceola as president at a meeting at West Memphis.

The board adopted a resolution urging directors to obtain franchises from all towns in their counties that want natural gas service. A progress report will be made this month when action to be taken by the organization will be decided.

The association now has a membership of 33 eastern Arkansas towns, Butler said.

Twenty-three have submitted franchises to the organization.

Butler said the association is a non-profit organization that proposes to pipe natural gas into east Arkansas from Memphis. The pipe line would cross the Mississippi river as part of the new bridge between Memphis and West Memphis.

District of Columbia

Commission Issues Opinion

THE District of Columbia Public Utilities Commission recently issued a 14-page opinion in support of its order last July, granting the Potomac Electric Power Company rate increases totaling \$2,750,000.

When the increases were ordered after public hearings this summer, the commission announced its decision and added its full findings and opinion would be issued later.

The opinion stated that Chairman James H. Flanagan and the rest of the

commission feel the new rate schedules are fair and reasonable and represent a definite improvement over the former rate schedule.

The opinion said the commission recognizes that the additional revenues provided by the new rate schedule during the first year after their effective date probably will amount to something more than the \$2,750,000. The commission said, however, the excess money would be turned to the benefit of the customers through the sliding-scale payment plan, if not offset by increased expenses.

Georgia

Court Upholds Power Hike

A \$327,913 annual rate increase awarded to the Georgia Power & Light Company was upheld last month by Fulton Superior Court Judge Bond Almand.

Two Valdosta businessmen and consumers in 25 south Georgia towns had asked that the increase be set aside because it was "unjust, unreasonable, arbitrary, and discriminatory."

They sought an injunction against the Georgia Public Service Commission, which awarded the rate hike.

In refusing to sign an injunction,

Judge Almand upheld the arguments of the company attorney, L. E. Patrick, of Waycross, and Assistant Attorney General Claude Shaw.

The two contended that the state commission, and not a superior court, should decide whether the new rate was too high.

They said the petitioners could appeal to the state commission for a new hearing.

Georgia Power & Light originally asked for a \$442,295 annual increase, but the commission granted only a hike of 10 per cent on residential rates and from 25 to 50 per cent on industrial rates.

Minnesota

Utility to Pay Extra City Lawyers

THE city of St. Paul may charge back to the St. Paul City Railway Company the costs of special attorneys hired to fight streetcar rate increases. Attorney General J. A. A. Burnquist gave this opinion recently at the request of Bruce J. Broady, St. Paul corporation counsel.

He said that under the so-called

Brooks-Coleman Act passed by the state legislature, such costs could be paid for attorneys other than the city attorney or members of his staff.

Broady said he had sought the opinion because he was "exploring" the possibility of hiring outside legal help to participate in fighting an anticipated rate increase request by the transit firm this fall.

THE MARCH OF EVENTS

Missouri

To Rule on City Utility Labor Case

THE state supreme court has taken jurisdiction in a test case to determine if the state antipublic utility strike law applies to a labor or wage dispute between a city and the employees of a municipally owned public utility.

Under an order issued on September 13th the court will hear arguments in an application by a union for a writ of mandamus to compel the state board of mediation to assume jurisdiction of a wage dispute between the city of Springfield and about 100 employees of the city-owned motorbus system.

The union, Division No. 691 of the Amalgamated Association of Street, Electric Railway, and Motor Coach Employees of America, last June asked the board of mediation to proceed under the so-called King-Thompson law to settle the wage controversy. Negotiations between the union and the city had been in progress since last January.

The board declined to take jurisdiction on the ground it had no authority over a dispute between a municipally owned public utility and its employees. The board took the position "municipal employees may not band together in order to bargain collectively with municipalities."

New Jersey

Gas Increase Authorized

THE state public utilities commission last month authorized the County Gas Company, serving Monmouth county and part of Middlesex county, to increase its rates, effective October 1st, to produce an additional \$153,000 of revenues each year.

The commission said the adjustment would give the company a rate of return of 4.6 per cent on net investment. That, it added, "is not considered to be excessive." Under present rates the company had net operating income of \$32,310, equivalent to 1.6 per cent return on its investment. The return will rise to \$95,700 under the new rates.

The commission said the company is engaged in efforts to obtain a supply of

natural gas. When natural gas becomes available, it added, "it is anticipated that it will result in substantial savings over the present method of manufacturing gas." If it obtains a natural gas supply, the company will be in a position to reduce rates, the decision said.

The state commission earlier in the month had approved an increase in the gas rates of the Jersey Central Power & Light Company that will raise the company's operating revenues by \$686,000 a year. It is expected that the new rates will yield the company about 3 per cent on its investment.

Only objection to the increase at hearings which ended last June came from the Federal government and concerned Fort Monmouth.

New York

Petition for Fare Vote Held Void

JOHN P. McGRATH, corporation counsel, informed Murray Stand, New York city clerk, last month that in his

opinion the American Labor party petition for the restoration of the 5-cent transit was "illegal and invalid."

The petition had been filed with Mr. Stand, under the law, in an attempt to bring about a referendum on the higher

PUBLIC UTILITIES FORTNIGHTLY

fare at the November election. The ALP had filed a petition with nearly 100,000 signatures, although the city charter requires only 50,000.

The ALP immediately took issue with Mr. McGrath's opinion and its state executive secretary, Arthur Schutzer, announced that a court fight would follow.

Ohio

Town Shelves Gas Lights

THE old lamplighter will soon be out of a job in Springfield as this city becomes one of the last in the state to trade its old gas lights for electric ones. Officials estimate the new lights will save the taxpayers at least \$6,000 a year.

The present 949 gas lights will be replaced by 500 electric ones.

Utility Wins 4-year Fight

THE Cincinnati Gas & Electric Company last month defeated efforts of the city council to force it to reduce its electric rates by 15 per cent and won a rate increase from the state public util-

ities commission that will add \$2,500,000 to its annual revenues.

A fund totaling \$5,800,000, impounded pending the decision, has been returned to the company and added to surplus. The impounded funds represented the difference between the collected rate and the reduced rates advocated by the city council.

Walter C. Beckjord, president of the utility, said the new rate means a rise in the average residential electric customer's bill of 52 cents a month.

About 315,000 consumers in five Ohio counties and northern Kentucky were affected by the rate increase.

Oklahoma

Firm Gets Unusual Order

THE state corporation commission recently ordered Oklahoma Natural Gas Company to furnish gas at market rate to Choctaw Gas Company after ordering the Choctaw Company to close down its gas production in the Quinton field.

Reford Bond, chairman, explained it was an unusual order in that the companies were competing and the conservation department had recommended an order for Choctaw Gas Company to cease production because of overproduction. He said the company furnished gas to the state penitentiary, Haileyville, Harts-horne, and Wilburton, and an order shutting it down without affording it a source of supply would deprive the penitentiary and the three cities of gas.

The order for it to close down on production probably will be in force a year until its production in the field is equal-

ized with that of Oklahoma Natural, Bond said. He also said there was a question as to whether the commission has the power to order Oklahoma Natural to sell gas to its competing company at market price.

Higher Gas Taxes Asked

AN increased tax on consumption of natural gas for support of state schools was approved at Enid last month by the joint committee on public school financing.

Committee members pointed out that approximately 90 per cent of all gas produced in Oklahoma is piped out of the state to the north and east sections of the country.

The committee is composed of five state senators, five representatives, five members of the Oklahoma Education Association, and five appointed by Governor Turner.



Progress of Regulation

Cost Allocations to Avoid Discrimination Between Customers

THE Utah commission, in approving a readjustment of rates for natural gas service, referred to the necessity of allocating the cost of service between customers.

The state commission recognized that it is difficult, if not impossible, to determine the fairness of an allocation of charges upon an exact mathematical basis.

Nevertheless, said the commission:

Even if over-all revenues are reasonable the class rates may be unfairly preferential and discriminatory and therefore unlawful. (Title 76 USCA 1943 as amended.) Dis-

crimination exists if two customers or classes of customers are charged the same price for different services or different prices for similar services. Therefore, in the determination of rates, consideration should be given to the characteristics and condition of service such as volume, load factor, and firm and interruptible service. The most reasonable guide to the rates to be charged is an allocation of the cost of service to the various classes of customers. The characteristics and conditions of service affect the cost of service and must be reflected in the method of allocation.

Re Mountain Fuel Supply Co. (Case No. 3275).



Gas Rates Revised to Reflect Costs In Various Classes

THE Georgia commission authorized the South Atlantic Gas Company to increase rates in order to offset substantial increases in cost of fuel, wages, and materials. Various adjustments were made in the rate classifications.

The residential general rate, which included 800 cubic feet of gas for a \$1 minimum bill, was changed to provide for only 400 feet or less per month. The commission said:

Taking into account fixed customer costs such as meter reading, billing, collecting, it appears that service provided by the South Atlantic Gas Company to minimum bill users is provided at less than cost, and that inasmuch as rate increases are now required, the residential rate should be revised to more nearly equal the cost of providing service

for the minimum bill of one dollar per month.

Moreover, the present residential price of 7.5 cents per hundred cubic feet for all gas used each month in excess of 100,000 cubic feet was increased to 10 cents in view of the substantial increase in the cost of fuels used in the manufacture of gas. The commission considered the fact that a substantial part of gas sold on this step would be heating gas, which has a relatively poor annual load factor. The commission then said:

Inasmuch as the price of fuels used to make gas has increased very substantially recently, and since the demand for heating gas coincides with the maximum demand on the company's system, and inasmuch as

PUBLIC UTILITIES FORTNIGHTLY

there appears to be no space capacity remaining in the generation and distribution facilities of the company, it appears proper that heating gas should be sold on the same rate schedule with general gas service to residential consumers.

Years ago the company had instituted flat rate water-heating and flat rate refrigeration schedules as optional rates. Later, these rates were frozen to the customers then served. The commission decided that because of the need for additional revenue these customers should be transferred to the general residential rate.

The commission also recognized an apparent loss on service to minimum bill commercial customers and prescribed a minimum charge of \$1.50 a month for 300 cubic feet of gas instead of the former minimum bill of \$1 for 800 cubic feet.

The company proposed to transfer commercial heating customers to the commercial general rate and to eliminate the heating rate. The commission said that while rate simplification was

thus achieved, it caused a rather substantial increase in the cost of gas to these customers because the commercial general rate was substantially higher than the present heating rate, being higher even than the residential general rate. To avoid this the order prescribed a heating rate for commercial customers.

In respect to a proposal to transfer optional wholesale industrial customers to the commercial general rate, the commission said that this would likewise create a substantial increase in cost of service to this group. The order, therefore, prescribed a wholesale industrial rate which was lower than the commercial general rate for very large use of service.

Two large use customers served on an optional special rate, said the commission, should not purchase gas at a substantially lower cost than other wholesale industrial users merely because the use of gas was slightly larger in amount. *Re South Atlantic Gas Co. (File No. 19440, Docket No. 8893-A).*



Gas Company Must Furnish Space-heating Service To Real Estate Development

THE Wisconsin commission held that its order limiting gas for space-heating service did not preclude a gas company from serving a certain real estate development. An amendment to the original order limiting gas space-heating service provided that no application for space-heating service should be accepted on and after January 21, 1947. It further provided that this service will be furnished to customers qualifying under its original rule, if construction was started and contracts for heating equipment had been executed prior to that date. The commission, noting that the ap-

plication of the real estate development met the qualifications set out in that order, said:

There is no dispute as to the filing of the original application for service, nor has the testimony of the complainant, that it was assured by the company that the restrictive orders of the commission would not affect its application, been refuted. Arrangements had been made for the purchase of heating equipment prior to the dead-line date and construction of at least the office building, which is considered to be a part of Estabrook Homes, had been commenced timely.

Re Milwaukee Gas Light Co. (2-U-2745).



Crossing Contract Yields to State Power

AN appeal by a city from a judgment for a railroad in its suit to prohibit the city from locating and constructing

a crossing over its right of way was dismissed by the Federal Circuit Court of Appeals.

OCT. 7, 1948

530

PROGRESS OF REGULATION

The city argued that a recently passed enabling statute gave it authority over all crossings within city limits and superseded an earlier statute giving the state commission power over such matters. The court ruled that since the enabling statute made no mention of railroad crossings, it could not be construed as impliedly repealing the earlier regulatory statute.

The city further argued that the commission's order closing the street over which it wished to restore a crossing was an abrogation of contract in violation of the Federal Constitution.

The court acknowledged that the construction of the crossing, in accordance with the enabling statute and city ordinances, constituted a contract between the city and the railroad. It pointed out, however, that the parties could not make a contract affecting the public interest so rigid and immutable as to render impotent the police power of the state. Such contracts, the court held, must yield to the power of a state agency to regulate in the public interest whether the agency existed at the time of the contract or thereafter. *City of Tulsa et al. v. Midland Valley R. Co.* 168 F2d 252.



Transfer of Electric Company Assets to New Corporation Disapproved

A JOINT petition of the Staten Island Edison Corporation and the Staten Island Electric Corporation for approval of the transfer by the former of all of its franchises, works, and systems to the latter, and for authority to issue bonds and preferred and common stocks was denied by the New York commission. It did not believe that the plan in its entirety was in the public interest.

So far as the accounts of the two corporations were concerned the plan showed no advantage from the public interest viewpoint. The commission observed that the accounts would not eliminate an excess in utility plant or a deficiency in the depreciation reserve.

The origin of the plan was an order of the Securities and Exchange Commission requiring General Public Utilities Corporation, the holding company owning and controlling both corporations, to divest itself of its interest in the selling corporation. Concerning the issuance of securities by the new corporation, the commission said:

Several questions naturally suggest themselves at this point. Assume that a larger amount could be obtained. Who would thus benefit and how can it be said that it would be in the public interest? There is nothing in the plan or in the record which indicates that anybody would benefit from such increased sales price except the GPU, and cer-

tainly its interest must be subordinated to that of the consumers on Staten Island. Suppose a new company were formed as proposed and the securities sold to bring a larger price to GPU, what would surely follow? Experience shows that inflated or excessive prices are not paid for utilities or their security issues without the expectation and a determined effort made to see that rates are so fixed or the company so operated that it will earn a return upon the larger price. The pressure of security holders for returns on their investments is one of the most frequent causes of high rates or inadequate service in the broad sense. And if the commission were to approve, how could it fairly refuse to allow the new company to earn a sufficient amount through rates to yield a return upon the large purchase price? All in all, it certainly is not in the public interest that the plan be approved in order that GPU obtain a higher price through Electric than it can obtain through Edison.

The proposal called for a high percentage of funded debt. It was pointed out that the company issuing the securities is a new and growing company which would need construction funds raised by the issuance of more securities. Because of the high percentage of funded debt, it was said to be obvious that no considerable amount could be raised by issuing more securities.

In a separate concurring opinion, Commissioner Eddy said if the transaction were consummated, the only

PUBLIC UTILITIES FORTNIGHTLY

changes would be in the name of the operating corporation and a considerable change in the capital structure of the company which would actually operate. He pointed out that the amount of senior securities which would be outstanding would be considerably increased.

One of the principal purposes of the enactment of the Public Service Law was to guard the public interest in respect to security issues, Commissioner Eddy believed that there was no reason for the

proposal except to accomplish in a pseudo legal way the issuance of securities which could not be issued in the form of a dividend. He felt that the proposed change in ownership of the assets neither offered any promise of more efficient operation nor any other benefit to anyone, except the owners of the existing and proposed corporations who might be able to dispose of the securities to the public more easily. *Re Staten Island Edison Corp. et al. (Case 13232).*



Old Power Project Newly Licensed Starts With Depreciated Cost Basis

OBJECTIONS by the Metropolitan Edison Company to provisions of a license tendered by the Federal Power Commission for its York Haven project have been overruled by the circuit court of appeals for the third circuit.

The company had asserted that a provision relating to actual legitimate original cost was not in conformity with the Federal Power Act and that provisions dealing with rate of return and amortization reserves required clarification.

It also contended that a statement by the commission that the company was "in trespass" because of its failure to obtain a license for several years was not justified.

The commission, following its practice in licensing projects which had been operating without a Federal license, made the effective date of the license January 1, 1938, and the termination date June 30, 1970. It provided that the actual legitimate original cost and accrued depreciation of the project as of January 1, 1938, should be determined in accordance with law and the commission's rules and regulations, and that the licensee should accept that cost less depreciation as being the net investment in the project on that date.

The company argued that, in view of the definition of "net investment" in § 3 (13) of the act, the commission was without authority to order that depreciation be considered in fixing a figure. The

court said that this section was intended to operate only in the period following the issuance and acceptance of a license.

It was said to be clear that the condition was not inconsistent with the Federal Power Act and not arbitrary or unreasonable, and, therefore, the commission had authority to impose such a condition. The court continued:

The "actual legitimate original cost and accrued depreciation of the project," the formula imposed by paragraph (A) (viii), will affect the "fair value" required of "permit" projects by § 23(a). We may not conclude that an existing project, not under permit, should be put in a better position as to value for regulatory purposes under a Federal license than an existing project under permit. On the other hand we can see no substantial reason why an existing project without permit should be in a worse position than an existing project under permit in so far as Federal licensing is concerned.

The formula set out by the commission in this condition, said the court, would form the basis for the application of the commission's regulatory functions in respect to the project, but the court would not decide that the base created by the formula would, as the commission contended and as the company feared, "fix the minimum" for which the United States would be held liable on recapture under § 14. That question, it was said, was not before the court, and the court might not give an advisory opinion respecting it.

An objection that the provision as to

PROGRESS OF REGULATION

rate of return and amortization reserve required clarification was disposed of with the statement that the commission's opinion, read in conjunction with a letter from the commission's secretary, left no doubt that a question raised by the company, as to whether earnings from which amortization reserves were to be set aside would be annual earnings or those earnings accumulated over a given period, remained open for determination.

The commission's statement that the project was "in trespass" because a license had not been obtained after enactment of the Federal Water Power Act in 1920 was not considered material. The court said it possessed no power to correct a statement in a commission opinion and the statement was not germane to any substantial issue presented for determination. *Metropolitan Edison Co. v. Federal Power Commission.*



Commission Has Power to Enforce Service Contract Between City and Town

THE Wisconsin Supreme Court affirmed a lower court order directing a municipal water plant to serve a grain and malting corporation.

The municipality's obligation to serve the plant was based on a contract which it had entered into many years earlier with the town in which the corporation was located. By the terms of this contract the town permitted the city to lay mains on its streets and the city agreed to extend water service to owners of lots abutting on the streets in which the mains were located.

The corporation acquired several parcels of land abutting on a "water main" street, built a plant, and applied for service. The court dismissed the city's contention that its obligation under the contract was to serve only residences and small businesses on the lots along the street. The court recognized that the water consumption of a large industrial plant was

much greater than that of a number of residences. However true this may be, the court said, it did not affect the service obligation created by the contract. The court added:

There is nothing in the contract between the utility and the town of Greenfield so limiting the utility's duty, and the court cannot now write in a provision which the utility wishes it had inserted.

The court overruled the city's contention that the enforcement of a contractual obligation to supply water should be for the courts and not the commission. It reasoned that the legislature had given the commission jurisdiction over utility service questions and that from a practical standpoint the commission is in a position to order and supervise the rendition of service in a manner that the courts are not. *City of Milwaukee v. Public Service Commission et al.* 31 NW2d 571.



Ancient Franchise Limits Commission Jurisdiction

A WATER utility's petition for a rate increase was dismissed by the Indiana commission for lack of jurisdiction.

The commission traced the historical relationship between the utility and the municipality in which it was operating and found that there was in effect be-

tween them a valid franchise contract establishing the rate. This rate, incidentally, was the same as that which the utility sought to have authorized.

The commission pointed out that there was no doubt about it having jurisdiction over the utility but it was limited to those matters not covered by the fran-

PUBLIC UTILITIES FORTNIGHTLY

chise contract. The commission stated that where such contract is in effect, it has no jurisdiction to alter or change rates which it establishes.

The commission concluded by advising the utility that with or without its approval the requested changes in its rate schedule might be made. The commission said:

In fact, in the face of said contract, peti-

tioner needs no authority from this commission to place said rates to be charged for water supply to private consumers in effect. It has had that right continuously since January 1, 1890, with the exception of the 10-year period beginning January 1, 1920, covered by the written contract entered into between petitioner and the city of Seymour on December 26, 1919, which, for said 10-year period, provided a different schedule of rates.

Re Seymour Water Co. (No. 20035).



Traffic Problem Not Proper Ground for Certificate Denial

THE Nebraska Supreme Court, in affirming the state commission's denial of a certificate to a suburban bus line to extend its lines into a large city, pointed out that the commission's action in such matters is final unless it exceeds its jurisdiction or acts arbitrarily.

To arguments offered by the city that increased traffic and loss of tax revenue would result from the certificate award, the court replied:

We do not think the evidence produced by the city of Omaha is sufficient to warrant the denial of the application, assuming that

there is a public necessity for granting it. The prospective loss of tax income or the possibility of adding to the traffic problem are not of themselves sufficient to defeat such an application if there is a public need for the proposed service.

The court, however, ruled that the commission had acted within the scope of its authority and that since service by existing carriers could be made adequate under commission direction the order denying the certificate was not arbitrary. *Effenberg et al. v. Omaha & C. B. Street R. Co. et al.* 33 NW2d 296.



Grade-crossing Order May Include Reconstruction Of Utility Lines

AN appeal by a borough from a commission order which, as an incident to a grade-crossing elimination, empowered a county to relocate and reconstruct subsurface water and sewer lines of the borough, was dismissed by the Pennsylvania Superior Court.

The basis for the borough's appeal was this provision in the Public Utility Law:

Provided, however, that no property owned by the commonwealth of Pennsylvania, or any municipal corporation thereof, at the date when this act becomes effective shall be subject to the commission or to any of the terms of this act, except as elsewhere expressly provided herein.

The borough's position was that water lines and sewers are property which

the quoted proviso exempts from commission orders.

The court answered the contention by carrying it to its logical conclusion as indicated in this statement:

It is at once apparent that adoption of the contention would completely abrogate and nullify the plenary and exclusive power vested in the commission by § 409(b) of the law, 66 PS § 1179, "to appropriate property for (the abolition) of any such (grade) crossing, and to determine and prescribe, by regulation or order, the points at which, and the manner in which, such crossing may be constructed, altered, relocated, or abolished. . . ." This result would almost inevitably follow because according to § 2 (15), *supra*, "municipal corporations" includes "all cities, boroughs, towns, townships, or counties," and it seems impossible

PROGRESS OF REGULATION

to imagine a "crossing" not located in some political subdivision, and whose construction, alteration, relocation, or abolition would not affect some property owned by it.

The net effect would be to permit the proviso to eat up an important power of the commission, and this, we feel confident, cannot have been the legislative intention.

The court further pointed out that the words "property of the state or municipal subdivision" as used in the proviso did not connote property used for gov-

ernmental functions but only property owned by the state or municipality in its proprietary capacity.

Thus, the commission concluded, property owned by a municipality in connection with a utility business which it was operating would be protected, while its streets, water lines, and sewers would not be protected from commission action. *Borough of Whitaker v. Pennsylvania Pub. Utility Commission.*



Contributed Property Excluded from Rate Base

AN investigation by the Pennsylvania commission to determine the reasonableness of the rates of a heating utility resulted in an order directing the company to file new increased rate schedules.

The commission pointed out that if continuity of utility operations is to be assured, it is necessary that a utility be provided with the reasonable cost of operations and a fair return.

The value of service lines paid for by consumers was excluded on the ground

that no consideration should be given contributed property in calculating a rate base.

The commission refused to consider an increased allowance for the salary of a new superintendent which the company planned to hire. The possibility of the hiring at the increased salary was not considered strong enough to justify making an allowance for it in the company's operating expense account. *Public Utility Commission v. Longacre Park Heating Co. (Complaint Docket No. 14164).*



Other Important Rulings

THE Federal Circuit Court of Appeals, reversing an order awarding damages to the Brooklyn Union Gas Company and Consolidated Edison Company of New York, Inc., for government condemnation of property, held that the standard method of valuing a franchise is on the basis of its earnings, past as well as prospective. Since the project had been completed it was held that the lower court's refusal to consider evidence as to a resulting increase in business to the utilities so that no actual loss had been incurred was prejudicial error. *United States v. Brooklyn Union Gas Co. et al. 168 F2d 391.*

The Pennsylvania commission, in approving a taxicab company's application

for an over-all rate increase of 5 cents per mile, found after an examination of the company's records and a computation of its depreciation that the new rates would yield a return of approximately 6 per cent, which was not considered unreasonable. *City of Pittsburgh v. Yellow Cab Co. of Pittsburgh (Complaint Docket No. 14246).*

The Alabama commission, in approving an amendment to a transit company's certificate changing its route of operation, noted that the city authorities had already approved the new route and pointed out that the question of the use of streets and highways for intracity transit service is a matter solely under the jurisdiction of local authorities. *Re*

PUBLIC UTILITIES FORTNIGHTLY

Birmingham Electric Co. (Docket 10505).

The Michigan commission, in entertaining a complaint against telephone service, said that it is incumbent upon it to establish a rate which will be commensurate with the value of the service actually being rendered. The company was not furnishing reasonably adequate service to the community which it served, not because of dilapidated or improper equipment, but rather because of its failure to keep abreast of the growth of the community by expanding its plant and equipment to meet these needs. *Re McKee et al. (T-574-48.1).*

A water company which had been authorized to make a surcharge for fire protection service to individual metered consumers outside of incorporated mu-

nicipalities was further authorized by the Indiana commission to make the surcharge of uniform application with respect to all of the company's individual consumers located outside of the incorporated cities and towns. *Re Indianapolis Water Co. (Case No. 20316).*

The New York commission, after investigating the operation of a motor carrier engaged in transporting peas to canneries, issued an order classifying peas which have been removed from their pods, cleaned, sometimes graded according to size, and sometimes dipped in hot water, as agricultural commodities exempt from commission regulation. The commission did not consider this preparation as such "commercial processing" as would remove the peas from this exempt classification. *Re Brown (Case 12879).*

Titles and Index

Preprints in This Issue of Cases to Appear in
PUBLIC UTILITIES REPORTS

TITLES

Baton Rouge Water Works Co., Consolidated Companies v.	(La)	12
Cia Mexicana De Gas, S.A. v. Federal Power Commission	(USCCA)	17
Consolidated Companies v. Baton Rouge Water Works Co.	(La)	12
Gas Available to Various Gas Corporations, Re	(NY)	23
Gas Light Co. of Columbus, Re	(Ga)	29
Lexington Teleph. Co., Re	(Ky)	1
Panhandle Eastern Pipe Line Co. v. Federal Power Commission (USCtApp[DC])		6

INDEX

Appeal and review—order granting certificate, 17; parties, 17.	12; frequent fluctuation, 1; private fire protection, 12.
Certificates of convenience and necessity—natural gas pipe line, 6; necessary findings, 6; rate conditions, 6.	Return—private fire protection, 12; telephone company, 1.
Depreciation—provision for obsolescence, 1.	Security issues—dividend restrictions upon issuance of securities, 29.
Expenses—taxes, 1.	Service—gas curtailment during shortage of supply, 23; grounds for denial, 23.
Monopoly and competition—natural gas pipe-line construction, 6.	Valuation—construction work in progress, 1; materials and supplies for telephone company, 1; rate base determination, 1; working capital, 1.
Rates—automatic water sprinkler service,	

Public Utilities Reports (New Series) are published in five bound volumes annually, with an Annual Digest. These Reports contain the cases preprinted in the issues of PUBLIC UTILITIES FORTNIGHTLY, as well as additional cases and digests of cases. The volumes are \$7.50 each: the Annual Digest \$6.00. *Public Utilities Reports* also will subsequently contain in full or abstract form cases referred to in the foregoing pages of "Progress of Regulation."

PUBLIC UTILITIES REPORTS

KENTUCKY PUBLIC SERVICE COMMISSION

Re Lexington Telephone Company

Case No. 1616

July 15, 1948

APPPLICATION by telephone company for increased rates; increased rates disapproved and refund of excess collected since company had put such rates into effect under bond ordered.

Rates, § 1 — Frequent fluctuation.

1. Telephone rates should not fluctuate every fifteen to eighteen months; unless an actual emergency arises it is against public policy, is unfair to investors, to management, and to the public alike, to disturb rates so often, p. 3.

Valuation, § 21 — Rate base — Matters considered.

2. The Commission in ruling on the reasonableness of rates cannot be oblivious to the statutory requirement that in fixing the value of utility property it give due consideration to (1) history and development of the utility and its property, (2) original cost, (3) cost of reproduction as a going concern, and (4) other elements of value recognized by law, p. 3.

Valuation, § 407 — Burden of proof.

3. The burden is upon an applicant for a rate increase to present evidence which will enable the Commission to fix a value upon his plant based upon the factors prescribed by law, p. 3.

Valuation, § 224 — Construction work in progress.

4. A telephone company is not entitled to charge interest on account of construction work in progress and to earn a return on the amount of such construction work simultaneously, p. 3.

Valuation, § 317 — Materials and supplies — Telephone utility.

5. It is inconceivable that a well-operated telephone utility would carry in its materials and supplies account more than 25 per cent of the original cost of its whole utility plant, p. 4.

KENTUCKY PUBLIC SERVICE COMMISSION

Valuation, § 293 — Working capital — Advance collection — Telephone company.

6. No allowance should be made for cash working capital as part of the rate base of a telephone company which does not show that it must advance cash to meet its obligations until it collects its accounts, while on the contrary it is proven that telephone rates, except tolls, are paid in advance, while bills are paid after they are incurred, p. 4.

Valuation, § 68 — Acquisition adjustment account.

7. The acquisition adjustment account of a telephone company should not be included in the rate base when the record fails to show that this item represents value, p. 4.

Depreciation, § 12 — Provision for obsolescence.

8. A charge as an operating expense of a telephone company to make provision for obsolescence, although it may be sound accounting for tax purposes, has no place in a rate case, p. 5.

Expenses, § 109 — Taxes — Overaccruals.

9. The amount overaccrued by a telephone company for state and local taxes during a period under investigation as a basis for rate making should be disallowed as an operating expense, p. 5.

Expenses, § 33 — Nonrecurring items — Amortization.

10. Amounts representing amortization purposes and charged to operating expenses of a telephone company should be disallowed for rate-making purposes when they will not recur, p. 5.

Return, § 111 — Telephone company.

11. A telephone company cannot complain that a rate of 7.4 per cent on the rate base allowed by the Commission is unreasonable, it further appearing that if certain controversial amounts were included in the rate base the rate of return would still be about 5.5 per cent, p. 5.

APPEARANCES: Ben L. Kessinger and Louis Cox, Attorneys, for applicant; Strother Kiser, Attorney, for City of Lexington; J. E. Marks, Attorney for Lexington—Chamber of Commerce, Inc.

By WHITTLE, Commissioner: The Lexington Telephone Company, (a wholly owned subsidiary of the General Telephone Company) which supplies telephone service to approximately 25,000 subscribers in and around Lexington, Kentucky, on October 30, 1947, notified this Commission that effective November 21, 1947, it would increase its rates by some \$214,884 annually, or about 24 per cent. Ob-

viously, hearings could not be concluded and a decision rendered on the matter within the intervening three weeks. So the Commission required the company to post a bond conditioned that it would refund to the persons entitled thereto any amount of the increased rates not finally allowed. At the hearings which ensued, the city of Lexington, the Lexington Chamber of Commerce, and others, protested the increase. Evidence was heard, and both the applicant and the complainants have submitted excellent briefs on the issues involved.

It should be borne in mind that in 1945, this company requested authority to convert its Lexington exchange

RE LEXINGTON TELEPH. CO.

to dial operation, at an estimated cost (including a new building) of more than \$3,000,000; and to charge certain increased telephone rates upon conversion. It was estimated that such conversion would require perhaps two years, or more. In that case (No. 1298 [1946]), 62 PUR NS 253, 255, the Commission authorized conversion to dial, but declined to approve or disapprove the proposed post-conversion rates, saying:

" . . . estimates of the company's operating revenues and expenses for the period following conversion can be made with greater accuracy after conversion has actually taken place some two years hence. For that reason this Commission can consider the company's proposed increase in its rate schedule more intelligently after the actual costs of conversion are known, and when estimates of operating revenues and expenses can be based upon conditions then prevailing."

The company proceeded with the construction of a new building and the work incident to conversion to dial, and it is now thought that this work will be completed and the cut-over made early in 1949. At that time the considerable increase in the telephone plant and the radical change in operating expenses will necessitate an examination of the rate structure of this enterprise.

[1] Consequently, whatever disposition is made of the present case must be based upon conditions prevailing during the period beginning November 21, 1947, and continuing through the balance of the conversion period—fifteen to eighteen months, perhaps.

Utility rates—especially telephone rates—should not fluctuate so often.

For them to do so means that before one rate case is disposed of, another may be well along its way, and neither the investor, the management, nor the customer can feel any security in the prevailing rate structure. Unless an actual emergency arises, it is against public policy, is unfair to investor, to management, and to the public alike, to disturb rates every fifteen or eighteen months. Nevertheless, if extraordinary circumstances justify such frequent rate fluctuations, the Commission should allow them, of course.

Most rate cases involve dividing the rate base into the net operating revenues and determining whether, under the circumstances, the resulting ratio constitutes a reasonable rate of return. Usually the rate base is made up of the value of the utility plant, the value of materials and supplies necessarily kept on hand for its maintenance, and the amount of cash working capital advanced for its orderly operation. In this case the amount of each of these items is controversial.

[2] This Commission is a statutory creature, and, as such, is amenable to the statutory law. It cannot be oblivious to K.R.S. 278.299 requiring it, in fixing the value of a utility property, to give due consideration to (1) the history and development of the utility and its property, (2) original cost, (3) cost of reproduction as a going concern, and (4) other elements of value recognized by the law of the land for rate-making purposes.

[3, 4] The burden is upon the applicant to present evidence which will enable the Commission to fix a value upon his plant based upon these factors. In this case he has not done so.

KENTUCKY PUBLIC SERVICE COMMISSION

Instead, he has predicated his case upon an "equivalent" rate base.

It does appear that the undepreciated original cost of the plant, including construction work in progress, amounts to \$4,025,426. This amount, however, must be reduced by \$953,927 on account of depreciation, and by \$142,001 on account of overcharges incident to retirements. It also includes on account of construction work in progress the amount of \$627,851. On a very great deal of this latter sum—the applicant declined to say how much—interest is charged during the period of construction. Obviously, applicant is not entitled to charge interest and to earn a return on this sum simultaneously. Consequently, this amount cannot be included in the rate base. So the applicant has failed to establish the depreciated original cost of his plant at more than \$2,301,647.

[5] To this amount should be added, for rate-base purposes, a reasonable amount for materials and supplies. Applicant claims \$609,809, based upon actualities; but this figure is wholly out of line with its amount carried in this account for previous years and with the amount carried in this account by its sister-subsidary, The Ashland Home Telephone Company. Nor is it comparable with the amount carried by other telephone utilities generally. It is inconceivable that a well-operated telephone utility would carry in its materials and supplies account more than 25 per cent of the original cost of its whole utility plant. Two hundred thousand dollars appears to be a generous amount for this account. This brings the rate base up to \$2,501,647.

[6] If applicant had shown that in

order to supply working capital, it must advance cash to meet its obligations until it collects its accounts, a reasonable sum for this purpose would also go into the rate base; but the proof shows that telephone rates (except tolls) are paid in advance, while bills are paid after they are incurred. The evidence in this case concerning cash working capital is not convincing and none can be allowed.

[7] Applicant contends that the amount of the acquisition adjustment account, \$756,819, should be included in the rate base; but this record fails to show that this item represents value, and it must be disallowed. The same may be said of the amount of \$142,001, disallowed on account of overcharges incident to retirements.

The rate base, then, based upon depreciated original cost of plant plus materials and supplies, is \$2,501,647. Reproduction cost might increase this amount, in the light of present inflation; and going concern value might reduce it materially because of unsatisfactory service; but the evidence on these factors is either wholly lacking or wholly inconclusive.

The Commission does not commit itself to the correctness of this rate base; but it is of the opinion that as of October 31, 1947, it is the largest amount tenable under the evidence in this case.

According to the books of the applicant its net operating income for the year ending on that date was \$161,596. This represents the difference between its operating revenues and its operating expenses. It admits, however, that its revenues for this period were reduced by \$27,326 on account of the strike and that this loss is not

RE LEXINGTON TELEPH. CO.

expected to recur in the future. If adjusted for tax purposes it leaves some \$16,396 net in increased revenues.

[8-10] Moreover, there are certain items of operating expenses in the applicant's statement to which the Commission cannot subscribe. For example: \$28,092 is charged as an operating expense to make provision for obsolescence. This may be sound accounting for tax purposes but it has no place in a rate case. It appears, also, that the amount of \$14,903 was overaccrued for state and local taxes during this period. An amount of \$12,000 and another of \$5,108 for amortization purposes were charged to operating expenses. For rate purposes the former at least should be disallowed, and the latter will not recur. If these amounts are added to the amount claimed by the applicant, its net operating income for the twelve months ending October 31, 1947, amounts to \$238,095.

[11] Effective November 21, 1947, wage and salary increases amounting to \$83,873 annually became effective but this increase results in an annual tax saving of approximately \$31,549 leaving a net increase of \$52,324. When all of the foregoing adjustments are considered it leaves an annual net operating income of \$185,771, representing an annual return of 7.4 per cent on the rate base referred to above. Applicant cannot complain that such a rate of return is unreasonable. Even if the two controversial amounts referred to are included in the rate base, the rate of return is still about 5.5 per cent.

Considerable proof was introduced concerning estimated revenues and expenses for the following year but this

evidence is far from convincing. Some of the operating expenses, in addition to wages and salaries, will probably rise. The value of the property may also increase, resulting in a somewhat higher rate base. It is impossible, however, to determine from this record what portion of these increases will be incidental to the program of conversion to dial, as opposed to those attributable to ordinary operations. Moreover, it is shown that the applicant has a waiting list of some 3,400 applicants for service. If it could serve all of them, its number of subscribers would be increased by 14 per cent and its gross revenues increased accordingly. There is some controversy concerning the number of these applicants who can be served. Applicant estimated that its facilities would only accommodate 625 of them during the 12-month period immediately following October 31, 1947. Yet, it was shown five months thereafter that it had already accommodated 857. Obviously, these additional subscribers will increase operating revenues. The Commission can see no reason why, except for the wage increase already accounted for, increased revenues should not affect increased expenses.

It was alleged that the service rendered applicant is inadequate. This, the applicant denies; but the proof clearly established that the service is very unsatisfactory, and the Commission cannot regard as adequate the service of any utility of applicant's size when it admits having a waiting list of 3,400 applicants for service, most of whom it cannot accommodate until after the lapse of at least a year. However, the Commission has not considered it necessary to inject into its de-

KENTUCKY PUBLIC SERVICE COMMISSION

termination of this case the issue of adequate service, because the rate base indicated by the evidence and the net operating income indicate that applicant is earning and will continue to earn a reasonable return.

After conversion to dial operation is complete, within from six to twelve months from now, it will be necessary to reexamine the rate structure of this

utility. Until that time the Commission is of the opinion that the rates of applicant in effect immediately before the filing of this notice are fair and reasonable, and should continue; and that it should refund to the persons entitled thereto the amount of the excess over said rates which it has collected since the filing of the notice herein.

UNITED STATES COURT OF APPEALS FOR DISTRICT OF COLUMBIA

Panhandle Eastern Pipe Line Company v. Federal Power Commission

No. 9588
— US App DC —, — F2d —
June 3, 1948

REVIEW of orders of the Federal Power Commission authorizing the construction and operation of a natural gas pipe line; affirmed. For decision of Federal Power Commission, see (1947) 67 PUR NS 427, and see also the subsequent decision in (1947) 69 PUR NS 328.

Certificates of convenience and necessity, § 104 — Natural gas pipe line — Needs of local communities.

1. A conclusion that the construction and operation of a natural gas pipe line from gas fields in another state to bring more gas into certain communities is required by public convenience and necessity within the meaning of § 7(e) of the Natural Gas Act, 15 USCA § 717f(e), is supported by evidence that the consuming public is unable to receive gas in sufficient volume to meet its needs; that the deficiency is becoming constantly greater; that the operator of an existing line has not sufficient facilities, and will not have sufficient facilities under permits for additional construction, to serve adequately the needs of the communities without injury to other communities; and that the project will make available an alternative service and supply of gas, p. 8.

Appeal and review, § 62 — Sufficiency of findings — Commission order.

2. Orders of the Federal Power Commission authorizing the construction and operation of a natural gas pipe line should be affirmed even if some of

PANHANDLE EASTERN PIPE LINE CO. v. FEDERAL P. COM.

the findings in support of the orders are unsupported, if without such findings there would still be a basis in the record for the Commission's conclusions, p. 8.

Certificates of convenience and necessity, § 77 — Ability of applicant — Support for finding.

3. A finding by the Federal Power Commission that an applicant for authority to construct and operate a natural gas pipe line is able and willing to perform the service proposed is supported by substantial evidence when it is shown that the applicant has secured substantial reserves of natural gas and has submitted reasonable proof of the financial and economic feasibility of the project, p. 9.

Certificates of convenience and necessity, § 169 — Necessary findings — Ability of applicant — Financing.

4. The Natural Gas Act does not require a finding as to the financial ability of an applicant for a certificate, under § 7(e) of the act, 15 USCA § 717f(e), as a basis for a finding that the applicant is able and willing properly to do the acts and to perform the service proposed, p. 9.

Certificates of convenience and necessity, § 169 — Necessary findings — Satisfactory rate schedule.

5. The Natural Gas Act does not require a finding as to a satisfactory rate schedule in support of a finding, under § 7(e) of the act, 15 USCA § 717f(e), that an applicant for authority to construct and operate a natural gas pipe line is able and willing properly to do the acts and to perform the service proposed, p. 9.

Certificates of convenience and necessity, § 5.1 — Jurisdiction of Federal Power Commission — Conditions.

6. The Federal Power Commission is authorized by § 7(e) of the Natural Gas Act, 15 USCA § 717f(e), to attach reasonable conditions to the issuance of a certificate and to the exercise of rights granted thereunder, p. 9.

Certificates of convenience and necessity, § 73 — Conditions — Financing — Action by other Commission.

7. A condition, attached by the Federal Power Commission to its authorization of a natural gas pipe-line project, that the applicant shall obtain approval of its financing plan by the Securities and Exchange Commission, because its parent company is a regulated holding company, is both practical and legal, p. 9.

Certificates of convenience and necessity, § 73 — Conditions — Rate schedules.

8. The Natural Gas Act does not require, and because of changing cost it would be illusory to require, that rates be fixed before construction of a natural gas pipe line, authorized under § 7(e) of the Natural Gas Act, 15 USCA § 717f(e), begins, p. 9.

Monopoly and competition, § 104 — Necessary findings — Authorization of natural gas pipe line.

9. A finding that a natural gas pipe-line company supplying gas to distributors is unable or unwilling to supply the present and future requirements of the market is not necessary as a basis for authorizing construction and operation of a natural gas pipe line by another company, p. 10.

UNITED STATES COURT OF APPEALS

Monopoly and competition, § 58 — Natural gas pipe line.

10. The Natural Gas Act does not establish the rule that monopoly is better than competition or that one source of supply is better than two, and it does not give an existing supplier of natural gas for distribution in a particular community the privilege of furnishing an increased supply instead of authorization for the construction and operation of a natural gas pipe line by another company, p. 10.

APPEARANCES: Robert P. Patterson, with whom John S. L. Yost, John W. Scott, and Harry S. Littman were on the brief, for petitioner; William Bradford Ross, General Counsel, Federal Power Commission, with whom Louis W. McKernan and W. Russell Gorman, Principal Attorneys, Federal Power Commission, were on the brief, for respondent; Thomas J. McGrath, with whom Amos M. Mathews was on the brief, for intervenors The Alton Railroad Company, et al., Lake Michigan Docks Association, et al., and National Coal Association, et al.; Archie C. Fraser, Assistant Attorney General of Michigan and of the Bar of the State of Michigan, pro hac vice, by special leave of court, for intervenor Michigan Public Service Commission; Frederick G. Hamley also entered an appearance for intervenor Michigan Public Service Commission; Donald R. Richberg and Charles V. Shannon, with whom Carl I. Wheat, Stanley M. Morley and Omar L. Crook were on the brief, for intervenor Michigan-Wisconsin Pipe Line Company; Raymond J. Kelly, Corporation Counsel, City of Detroit, for intervenor City of Detroit; James H. Lee, Assistant Corporation Counsel, City of Detroit, also entered an appearance for intervenor City of Detroit.

Before Edgerton and Proctor, JJ., and Morris, DJ., sitting by designation.

EDGERTON, J.: This is a petition by Panhandle Eastern Pipe Line Company ("Panhandle") under § 19(b) of the Natural Gas Act¹ to review orders of the Federal Power Commission authorizing Michigan-Wisconsin Pipe Line Company ("Michigan-Wisconsin") to construct and operate a natural gas pipe line from a point in the Hugoton field in Hansford county, Texas, to the Austin storage field in Michigan, and also a branch line from a point in Illinois into Wisconsin, for the purpose of supplying natural gas to various communities in Wisconsin, Iowa, Missouri, and Michigan. Two Commissioners dissented.

The largest market to be served is the Detroit-Ann Arbor area in Michigan. Natural gas is now brought into that area only by Panhandle. The local distributor there, Michigan Consolidated Gas Company, and Michigan-Wisconsin are under common control.

[1, 2] The Commission made the following findings among many others. (67 PURNS 427, 454-457.) "Applicant [Michigan-Wisconsin] proposes to serve natural gas in areas within the state of Wisconsin where a substantial demand for such service exists, no other application for authority to render such service being now before this Commission. Applicant also proposes to add greatly to the

¹ 52 Stat 821, 831, 15 USCA § 717r(b).

PANHANDLE EASTERN PIPE LINE CO. v. FEDERAL P. COM.

supplies of natural gas available for service within the state of Michigan where a demand for such enlarged service has also been demonstrated, no other application for the adequate augmentation of presently available supplies to meet such market requirements being now before this Commission." "The consuming public in Detroit and elsewhere has . . . been unable to receive natural gas in sufficient volume to meet its needs and desires by reason of the inability of distributing companies to obtain adequate quantities of such gas . . . The deficiency is becoming constantly greater." Although Panhandle "has applied for and received in a related case . . . authority for somewhat enlarged facilities which will enable it to increase to some extent its deliveries to said markets in Michigan, inter alia, it has not applied for sufficient facilities nor demonstrated its ability to serve adequately the needs of these markets in addition to the expanding requirements of those which it enjoys in the other areas which it supplies in Indiana, Illinois, and Missouri." This latter finding of the Commission plainly means that any large increase in the volume of natural gas supplied by Panhandle in Detroit-Ann Arbor might be at the expense of other communities. On the other hand, approval of Michigan-Wisconsin's application will benefit not only Detroit-Ann Arbor but other communities as well: the Commission found that "a combined population of more than 1,388,000 people will for the first time secure the benefits to be derived from the introduction of natural gas service in

the communities in Wisconsin, Iowa and Missouri" that Michigan-Wisconsin proposes to reach. Even in the Detroit-Ann Arbor area itself, entry of Michigan-Wisconsin will have advantages over service, however expanded, by Panhandle alone. It will result in competition there, and will also make "available to the Michigan market an alternative service and supply of natural gas from the area of the largest gas reserves in the United States. That such an independent additional and reliable source of supply will be of great value to the area to be served and benefit public convenience and necessity admits of no doubt."

We think these and other findings are supported by substantial evidence and support the Commission's conclusion that the Michigan-Wisconsin project is, in the words of § 7(e) of the Natural Gas Act, 15 USCA § 717f (e), required by "public convenience and necessity." Even if some of the findings were unsupported, the orders under review should be affirmed "since, without such findings, there would still be a basis in the record for the [Commission's] conclusions."²

[3-8] The Commission found that Michigan-Wisconsin is "able and willing properly to do the acts and to perform the service proposed." This finding, like that of public convenience and necessity, is expressly required by § 7(e) of the act. We think it is also supported by substantial evidence. Panhandle says it is not supported by findings or proof of financial ability or a satisfactory rate schedule. The act does not require such findings. The Commission did find, on sufficient evi-

² National Labor Relations Board v. Newport News Shipbuilding & Dry Dock Co.

(1939) 308 US 241, 247, 84 L ed 219, 224, 60 S Ct 203.

UNITED STATES COURT OF APPEALS

dence, that Michigan-Wisconsin "has secured substantial reserves of natural gas and has submitted reasonable proof of the financial and economic feasibility of its project." (Section 7(e) of the act expressly authorizes the Commission to attach reasonable conditions "to the issuance of the certificate and to the exercise of the rights granted thereunder." The Commission attached the condition that Michigan-Wisconsin "shall obtain approval of its proposed plan of financings by the Securities and Exchange Commission . . ." because the parent company, American Light and Traction Company, was a regulated holding company and therefore no definite commitment for financing was possible without such approval. This was both practical and legal. Congress has not confronted the two Commissions with a dilemma like that created by the famous municipal ordinance requiring that when two trains approach a grade crossing at the same time, both shall stop and neither shall proceed until the other has proceeded. The Commission also provided that the authorized facilities "shall not be used for the transportation or sale of natural gas subject to the jurisdiction of the Commission until applicant submits to this Commission a schedule of rates and charges in a form satisfactory to this Commission providing for adequate and reasonable rates and charges consistent with the public interest." The act does not require, and because of

changing costs it would be illusory to require, that rates be fixed before construction begins.

[9, 10] Panhandle says there were no findings or proof that it was unable or unwilling to supply the present and future requirements of the Detroit and Ann Arbor markets. We think findings to substantially that effect, supported by proof, are included among those we have quoted above.³ We also think such findings unnecessary. Detroit and Ann Arbor are not the only markets involved. The Commission rightly took into account the interests of other communities now served by Panhandle and of still others that will be served by Michigan-Wisconsin. Even apart from such interests, nothing in the Natural Gas Act suggests that Congress thought monopoly better than competition or one source of supply better than two, or intended for any reason to give an existing supplier of natural gas for distribution in a particular community the privilege of furnishing an increased supply. No such privilege can be reconciled with the general mandate in § 7(e) of the Natural Gas Act that "a certificate shall be issued to any qualified applicant . . . if it is found that the applicant is able and willing properly to do the acts and to perform the service proposed . . . and that the proposed service . . . is or will be required by the present or future public convenience and necessity."⁴ Any such privilege is specifically neg-

³ The Commission's statement that Panhandle "has expressed a willingness to meet the enlarged requirements of said local markets" does not mean that Panhandle had proposed to the Commission a plan that would actually meet their actual requirements. So interpreted, the statement would contradict its context.

⁴ 56 Stat 84, 15 USCA § 717f(e). Cf. *United States v. Pierce Auto Freight Lines* (1946) 327 US 515, 530-532, 90 L ed 821, 63 PUR NS 405, 415, 66 S Ct 687; especially footnote 20, where the court says: "The [Interstate Commerce] Commission has recognized the value of reasonable competition."

PANHANDLE EASTERN PIPE LINE CO. v. FEDERAL P. COM.

ated by § 7(g), which provides that "Nothing contained in this section shall be construed as a limitation upon the power of the Commission to grant certificates of public convenience and necessity for service of an area already being served by another natural-gas company."⁵

Panhandle says that even if the issuance of a certificate to Michigan-Wisconsin were warranted, it was error "to cut the rights of Panhandle in the Detroit and Ann Arbor markets to a volume below that which it is delivering under valid certificates." We do not find that this was done. The Commission, in 69 PUR NS 328, 339, said: ". . . although Panhandle has no exclusive right to serve a market for all time and thus claim a monopoly, . . . there is no intention on the part of the Commission herein to modify, terminate or set aside any certificate heretofore issued by the Commission to Panhandle." The Commission even imposed upon its grant to Michigan-Wisconsin these express "terms and conditions" for the affirmative protection of Panhandle: "(1) That Panhandle is permitted to deliver natural gas to Michigan Consolidated in accordance with the terms and conditions of its existing contracts during the life of such contracts, and (2) That upon the termination of such contracts, and upon mutually sat-

isfactory terms, Panhandle is afforded reasonable opportunity to deliver and sell to Michigan Consolidated *not less than*⁶ the annual volumes of gas delivered and sold by it for either the years 1942 or 1945 or the average delivered for the 5-year period 1942 through 1946. Further, Panhandle shall have the right to participate in the future growth of the Detroit and Ann Arbor markets by being given the opportunity to deliver and sell such additional volumes of gas to Michigan Consolidated as the latter may require in excess of the volumes of gas then being contractually purchased by it from Panhandle and Michigan-Wisconsin, in order to maintain adequate service to consumers in the Detroit and Ann Arbor districts." Panhandle points out that it sold more gas in 1946 than in the previous years to which the Commission referred. But the conditions by which the Commission limited its grant to Michigan-Wisconsin did not limit Panhandle to the volume of those years. Condition (2) expressly fixed a minimum for Panhandle, not a maximum.⁷

We find no adequate basis for Panhandle's criticism of the procedure that was followed or its charge of bias against certain members of the Commission.

Affirmed.

⁵ Cf. Kentucky Nat. Gas Corp. v. Federal Power Commission (1947) 68 PUR NS 76, 159 F2d 215.

⁶ Italics supplied.

⁷ Moreover the Commission's order as we read it reserved to the parties including Panhandle the right to file applications at any time, and from time to time, for modification or termination of the conditions.

LOUISIANA PUBLIC SERVICE COMMISSION

Consolidated Companies, Incorporated
et al.

v.

Baton Rouge Water Works Company

No. 4759, Order No. 4869

June 4, 1948

PETITION to require water company to abolish rates for automatic fire protection sprinkler service; denied.

Rates, § 616 — Water utility — Automatic sprinkler service — Fire protection.

1. The fact that no water is normally consumed by automatic sprinkler systems for private fire protection has little bearing upon the question whether a water company may charge for this standby service, p. 13.

Rates, § 616 — Water utility — Automatic sprinkler service — Fire protection.

2. That private companies effect large savings in their fire insurance costs by having automatic sprinkler systems in their buildings for fire protection is of little or no assistance to the Commission in determining whether a water company may charge for this automatic sprinkler service, p. 14.

Return, § 72 — Classes of water service — Private fire protection.

3. A utility company is morally and legally entitled to earn a fair return upon its investment, and if a portion of a water company's investment was made in response to the demand for fire protection service, then the beneficiaries of that service must provide a return upon the investment devoted to that use, p. 15.

Rates, § 135 — Reasonableness — Comparison.

4. It is pointless to compare rate levels in various towns for the purpose of determining the reasonableness of a water company's rates, since in each case the rate must be determined according to the extent of the investment and the operating costs of the utility, and these factors vary, p. 16.

Rates, § 616 — Water utility — Fire protection service — Private sprinkler system.

5. A water company may charge for sprinkler standby water service, since private fire protection service must bear its fair proportion of the over-all burden of supplying service, p. 16.

By the COMMISSION: The plaintiffs in this proceeding are six domestic corporations, doing business in East Baton Rouge Parish and owning buildings which are equipped with automatic sprinkler systems for private fire protection. There are, in the parish, fifty-nine such sprinkler

CONSOLIDATED COMPANIES v. BATON ROUGE WATER WORKS CO.

systems served by the respondent but the other fifty-three are not parties to this complaint.

Respondent is a utility company rendering water service in the city of Baton Rouge and its environs, and affording connections to the above-mentioned sprinkler systems for standby fire protection service. It has approximately 23,000 customers all told.

Plaintiffs assail the rates charged by respondent for this standby service, which rates were established by this Commission in its Order No. 1486 of December 31, 1934, issued in its Docket 2333, following an audit of respondent's books and an investigation of its plant. These rates are:

Size of Connection	Gross Monthly	Net Monthly
1 inch connection on the main	\$.90	\$.81
1½ inch connection on the main	1.50	1.30
2 inch connection on the main	2.00	1.80
3 inch connection on the main	3.00	2.70
4 inch connection on the main	4.00	3.60
6 inch connection on the main	5.00	4.50
8 inch connection on the main	7.00	6.30

with the provision that where one occupancy is served by more than one connection, the rates shown in this schedule will be paid on the largest connection and one-half of the applicable rate on each other connection.

Plaintiffs contend that these charges for standby service are improper and should be abolished, or, in the alternative, that they should be reduced to not more than one dollar per month.

Hearing was had before the Commission on March 9, 1948, at Baton Rouge. At the conclusion of the testimony, the matter was taken under ad-

visement pending the filing of briefs, which have now been submitted and considered.

It is unfortunate that much space was consumed in the record by both sides in developing matters which have little or no relevance to the issues.

[1] For example, plaintiffs devoted considerable effort to showing that the sprinkler systems consume no water, and would not consume any save in the event of fire, and they advance this fact as a reason for the abolition of the charges. This contention is apparently based upon a fundamental misconception of the function of a water utility. Such a utility does not sell merely water, but *water service*, which is a materially different commodity. Actually, it sells to its customers the assurance that when their faucets are turned on, or their valves opened at any hour of the day or night, water will flow in the desired volume and under the proper pressures. The practice of basing the charges for ordinary service upon the volume of water used is merely a convenient yardstick by which to apportion justly, among the customers, the burden of applying the service; and the charges bear little, if any, relationship to the intrinsic value of the water used.

Consequently, the fact that no water is normally consumed by these sprinkler systems has little bearing upon the issues before us because the value of the water, as such, is a very minor item in the respondent's total operating costs. In 1945, for instance, its "Source of Water Supply Expense" was but \$6,868.02 out of a total operating expense of \$379,107.66; this does not constitute an appreciable factor in assessing the burden laid upon

LOUISIANA PUBLIC SERVICE COMMISSION

the respondent in providing the standby service.

[2] The respondent, on the other hand, exerted itself to show that the plaintiffs effect large savings in their insurance costs by having the sprinkler systems in their buildings. This, while true, is a matter outside the scope of this proceeding and is of little or no assistance to us in judging the merits of the charges complained of.

A water utility must, of course, furnish water service for ordinary daily purposes and no one can seriously question that it is also obligated to furnish fire protection service. This is a fact accepted and recognized by regulatory bodies everywhere. Thus, such a utility performs two main functions—it supplies water service for normal daily uses, and it stands ready to supply water, in appropriate volume and under appropriate pressures, for the fighting of fire. Obviously, if the water company were not under the latter obligation, and had merely to supply water service to the regular users, its mains could be substantially smaller, its pumping capacity could be less, and its reservoirs could be of lesser capacity and perhaps fewer in number, for the demands upon it would not be nearly so extensive and, moreover, could be calculated in advance. Thus, its over-all investment need not be so great. But, since the respondent has the duty of providing fire protection service, it must be prepared to meet, without notice and at unforeseeable times and places, a demand for water far in excess of any demand that could be made upon it for normal purposes. It has been said that a utility company is like a bridge—it must be so constructed that it can bear not only the

average load, but the *maximum* load that can be placed upon it.

This fact was briefly pointed out by the respondent at the hearing, upon which plaintiffs demanded that respondent place in the record figures to show the additional investment it had been obligated to make by reason of its fire protection duties and, in particular, the additional investment it had had to make to serve the fifty-nine users of private sprinkler systems. The Commission knows of no accounting or mathematical means by which such an allocation of investment could be made, as to fifty-nine customers out of some 23,000; and such a demand is, of course, unreasonable. On the other hand, the extent of the additional investment required by respondent's duty to render *fire protection service, in general*, is demonstrable and can be calculated within reasonable limits. However, a segregation of investment of this kind could not be made on the basis of the data contained in this record, and will have to await the Commission's next audit of respondent's records and plant accounts.

Plaintiffs then contended that the maintenance of the volume and pressure necessary for fire fighting was a duty already imposed upon the respondent by its contract with the city of Baton Rouge, under which it provides such standby service for the public fire hydrants, and that the connection of these private sprinkler systems to the mains imposes no additional burden upon the respondent. In the city of Baton Rouge there are 422 public hydrants and in the remainder of the Parish, some 400, to which respondent supplies standby service and for which the respondent receives \$50

CONSOLIDATED COMPANIES v. BATON ROUGE WATER WORKS CO.

per year per hydrant. Neither the city nor the parish, however, has joined in this complaint.

The logic of plaintiffs' theory that the city and the parish should pay \$50 per year per hydrant, while they, with connections and potential demands of the same or larger size, should pay nothing, is not apparent to the Commission. It is as though a passenger should demand a free railroad ticket on the ground that the train had a number of empty seats and the Commission was requiring the railroad to operate the train anyway.

[3] A utility company is morally and legally entitled to earn a fair return upon its investment. In the case of a water utility, if a substantial portion of its investment was made in response to the demand for fire protection service, then the beneficiaries of the fire protection service must provide a return upon the investment devoted to that use, or made in response to that demand. If these beneficiaries do not carry their share of the burden, it must fall upon those customers who use water for ordinary daily purposes, and an unjust discrimination must result.

This situation is widely recognized by regulatory bodies. Utility Commissions everywhere attempt to apportion the load justly between the two classes of users of water service, and they do so in pursuance of the duty universally placed upon them to prevent discrimination. Many such cases could be cited, but we mention below only a few of the most recent.

After an investigation, by the Wisconsin Public Service Commission, of the water rates in the city of Marshfield, Wisconsin, that Commission found that: ". . . the utility failed

to cover all costs on a 5 per cent return basis by \$1,514. However, the shortage comes from a failure to charge for fire protection what can be equitably assigned to this class of service. On the other hand, general service customers are being charged in excess of reasonable rates." The Commission, therefore, ordered an increase in the standby fire protection rates and a reduction in the general service rates. (1946) 65 PUR NS 371, 372.

Similarly, the Maine Public Utilities Commission, upon an investigation of the water rates in Caribou, Maine, found that 25 per cent of the total revenues of the Caribou Water Works Corporation should properly be derived from its fire protection service. (1947) 68 PUR NS 81, 85. (We, of course, could not undertake to say, without an investigation, that that proportion should apply to the gross revenues of the respondent herein, which in 1946 were \$592,014.68; but the Maine Commission's decision illustrates the general recognition given to the fact that fire protection should pay its way. Incidentally, in 1946, only 7.18 per cent of respondent's revenues were derived from fire protection service.)

Again, after an investigation of the water rates in Appleton, Wisconsin—(1947) 69 PUR NS 402—the Wisconsin Commission ordered an increase in the rate for sprinkler standby service on a 6-inch connection from \$31.25 per quarter to \$40 per quarter, with corresponding increases as to the other sizes, upon the ground that such standby service was not carrying its proportionate share of the total burden. It may be observed, in passing,

LOUISIANA PUBLIC SERVICE COMMISSION

that \$40 per quarter is a considerably greater charge than the one complained of herein on a 6-inch connection.

One of the witnesses, presented by the plaintiffs, testified that his company owned sprinklered buildings in the towns of Plaquemine, Lafayette, Rayne, Morgan City, Houma, Thibodaux, Jennings, Opelousas, Abbeville, Hammond, and Donaldsonville, at which no charge is made for standby sprinkler service. The waterworks in all of these towns, except Donaldsonville, are municipally owned and are, therefore, not under our jurisdiction; and we are not informed of the underlying theories which impel these municipalities to render this standby service free. The witness' company also owns sprinklered buildings at New Iberia, New Orleans, Shreveport, and Lake Charles, at which he stated that a "nominal" charge is made. Of these, Lake Charles is the only one over which we have jurisdiction and the rate there is \$4.50 per month for a 6-inch connection, the same as the Baton Rouge rate complained of herein.

[4] It is, of course, pointless to compare the rate levels in the various towns, for in each case the rate must be determined according to the extent of the investment and the operating costs of the utility, and these factors vary.

They vary, also, from time to time with the same utility, and the Commission does not now undertake to say that the rates fixed by it in Baton Rouge, in 1934, are proper today. The determination of the proper levels must, as hereinbefore stated, await our next audit of the respondent's accounts, as this record contains no data upon which such a determination could be made. In 1946, the Commission acquired, for the first time, a permanent staff with which to fix the rate bases of the utility companies of the state; and this work is proceeding company by company. In due course, the respondent herein will be reached; and, in the meantime, the Commission has no basis upon which to found any assumption that the standby fire protection rates, fixed in 1934, are improper.

[5] It is the finding of the Commission, therefore, that private fire protection service of the kind here involved should, and must, bear its fair proportion of the over-all burden of supplying water utility service, and that a charge for such standby service is justified and proper. It is also the Commission's finding, as to the alternate prayer of petitioners herein, that there is nothing in this record to support any alteration in the present rates for sprinkler standby water service.

UNITED STATES CIRCUIT COURT OF APPEALS, FIFTH CIRCUIT

Cia Mexicana De Gas, S. A. et al.

v.

Federal Power Commission

Nos. 11790, 11791

167 F2d 804

May 7, 1948

PETITIONS to review orders of Federal Power Commission under Natural Gas Act authorizing exportation of gas and granting a certificate of public convenience and necessity; petitions for review and for leave to adduce additional evidence denied.

Appeal and review, § 80 — Parties — Natural Gas Act.

1. The state of Texas and the state Railroad Commission and a Mexican gas company whose principal source of supply is Texas gas purchased under an export permit are aggrieved parties within the meaning of the Natural Gas Act and entitled to petition for review of orders of the Federal Power Commission authorizing a new company to export gas from Texas to Mexico and authorizing that company to construct and operate a natural gas field line to transport gas, p. 19.

Appeal and review, § 28.1 — Scope of review — Order granting certificate.

2. Normally an order of the Federal Power Commission granting a certificate, under § 7(c) of the Natural Gas Act, 15 USCA § 717f(c), may be set aside only when the evidence admits of but one conclusion, that its granting will not serve public convenience and necessity, p. 19.

Appeal and review, § 53 — Grounds for reversal — Order authorizing export of gas.

3. One seeking to have the court set aside an order of the Federal Power Commission, issued under § 3 of the Natural Gas Act, granting an export permit must point to a record showing, so clearly and positively as to override the Commission's finding, that the granting of the permit is in fact inconsistent with the public interest, p. 19.

Appeal and review, § 28.1 — Scope of review — Commission order — Differing decision on rehearing.

4. The function of the court on the review of findings and an order of the Federal Power Commission changing earlier findings and an earlier order on rehearing is to determine not which of the two findings and orders was the best but whether the findings and order under review are without evidence to support them, p. 20.

Procedure, § 28 — Fairness of hearing — Reception of statement without cross-examination.

5. Reception by the Federal Power Commission of a statement by an employee of a corporate agency of the Mexican Government as to the natural

UNITED STATES CIRCUIT COURT OF APPEALS

resources in a Mexican natural gas field, under an agreement with the Mexican Government that he should not be subject to cross-examination, was not of such a prejudicial character as to make a hearing on an application for an export permit unfair, where his statement was given little or no weight and the conclusion of the Commission was based upon a full consideration of the evidence as a whole and was entirely supported by it, p. 21.

Witnesses, § 1 — Commission refusal to subpoena.

6. A refusal of the Federal Power Commission to issue a subpoena for a witness in a hearing on an application for an export permit and a certificate of convenience and necessity was not prejudicial error where his testimony would not have been relevant or material to the issues involved, p. 21.

Parties, § 2 — Necessary parties — Parent corporation.

7. The failure of the Federal Power Commission, at the request of objectors, to make a parent corporation a party to a proceeding by its subsidiary to obtain authority was not error, p. 22.

Appeal and review, § 74 — Additional evidence.

8. A motion before the appellate court to adduce additional evidence before the Federal Power Commission as to facts which have occurred since the hearing on an application for an export permit and for a certificate of convenience and necessity under the Natural Gas Act should be denied, without prejudice to the rights to reopen the proceeding before the Commission, where the parties would be able to present them to the Commission on a motion to reopen as effectively as they could do if the matter were referred back by the court for the taking of further testimony, p. 22.

Certificates of convenience and necessity, § 88 — Consistency with public interest — Natural Gas Act.

Statement by Federal court that a certificate of public convenience and necessity under § 7(c) of the Natural Gas Act, 15 USCA § 717f(c), requires as a condition to its granting that the Commission make a positive finding of consistency with the public interest, p. 20.

Gas, § 11 — Export permit — Necessary findings.

Statement by Federal court that an export permit must be issued under § 3 of the Natural Gas Act unless the Commission makes a negative finding, p. 20.

APPEARANCES: Henry F. Holland, of Houston, Tex., for petitioner Cia Mexicana, De Gas, S. A.; Binford Arney, of Corpus Christi, Tex., for intervener, Reynosa Pipe Line Co.; James D. Smullen, Assistant Attorney General of Texas, for petitioners State of Texas et al.; Bradford Ross, General Counsel, and Charles E. McGee,

Assistant General Counsel, Federal Power Commission, both of Washington, D. C., for respondent.

Before Hutcheson, Holmes, and Waller, CJJ.

HUTCHESON, CJ.: The review sought is of orders of the Federal Power Commission authorizing the exportation¹ of natural gas from Texas to

¹ Entered in Commission Docket # G-595 (1946) 64 PUR NS 162, the order authorized the issuance of a permit to Reynosa Pipe Line

Co. upon conditions and subject to being modified from time to time, or terminated on further order of the Commission, to export

CIA MEXICANA DE GAS v. FEDERAL POWER COM.

Mexico and granting a certificate^a of public convenience and necessity.

Joining in a kind of Janus headed attack upon them, the state of Texas and the Railroad Commission, on the one hand, and Cia Mexicana De Gas, S. A., on the other, are here seeking their overthrow.

It is true that both the state of Texas and Cia Mexicana do, in their petitions for review and their joint brief, rely in the main on the same claims of error. But it is further true that, from the standpoint of the grounds of their opposition to the orders, the state and Cia Mexicana did not see eye to eye.

In its intervention, Cia Mexicana, whose principal source of supply is Texas gas purchased from United Gas Pipe Line Company, under an export permit, did urge, as Texas did, that Mexicana had vast resources of gas capable of development, but its emphasis was upon its status and position as a public utility company serving the territory sought to be invaded by Reynosa and the protection of its rights as such company.

The emphasis of the state of Texas in the Railroad Commission's motion to present additional evidence upon the gas resources of Mexico was entirely upon the conservation of Texas gas for use in Texas and southwestern United States.

To the claim, however, of Reynosa, that the opposition of Texas to its export permit, while it did not and does not oppose the permit under which Cia

Mexicana gets its gas, presents an inconsistency, Texas answers simply, "Enough is enough."

[1] In addition to petitioning for review, Cia Mexicana has filed a petition to introduce additional evidence, as to matters occurring since the hearing and order. Reynosa Pipe Line Company, urging that petitioners are not aggrieved persons under the Natural Gas Act and that their petitions present nothing for review, moves to dismiss the petitions for review and to introduce additional evidence. The Federal Power Commission opposes the introduction of additional evidence.

We make short work of Reynosa's motion to dismiss. We think it clear that petitioners are aggrieved parties within the meaning of the act, and, as such, are rightfully here. Mexicana's motion to adduce additional evidence, however, is, for the reasons hereinafter stated, denied.

[2, 3] On the merits, petitioners claim that the orders should be set aside and the matter returned to the Commission for a rehearing because they are without support in the evidence, or, if not for that reason, because they are based on a hearing unfair to petitioner.

In *Arkansas Louisiana Gas Co. v. Federal Power Commission* (1940) 36 PUR NS 71, 113 F2d 281 and in *Department of Conservation of Louisiana v. Federal Power Commission* (1945) 58 PUR NS 122, 126, 148 F2d 746, 750, this court has had occasion to fully consider the powers

natural gas from named fields in Hidalgo county, Texas, to Mexico, for use of Gas Industrial.

^a Entered in Docket # G-748, the order issued to Reynosa Pipe Line Co., a certificate of public convenience and necessity, author-

ized it to construct and operate a natural gas field line in the Hidalgo county fields, covered in the export order, and a pipe line 30 miles long to transport the gas from those fields for delivery to the pipe-line facilities of Gas Industrial de Monterrey.

UNITED STATES CIRCUIT COURT OF APPEALS

granted the Commission and the scope of review of its orders when entered under § 7(c) of the Natural Gas Act, 15 USCA § 717f (c). In the last cited case, we said:

"Normally it is for the Commission to draw the conclusion that the present or future public convenience and necessity either requires or does not require the granting of a certificate. Normally an order granting a certificate may be set aside only when the evidence admits of but one conclusion, that its granting will not serve public convenience and necessity,"

Here two situations are under review. One, the granting of a certificate of convenience and necessity, is the precise one dealt with in those cases. The other, the granting of an export permit, is provided for in § 3 of the Natural Gas Act.³ Under the command of this section, "the Commission shall issue such order upon application, unless, after opportunity for hearing, it finds that the proposed exportation or importation will not be consistent with the public interest." (Italics supplied.)

A certificate of public convenience and necessity requires as a condition to its granting that the Commission make a positive finding of consistency with the public interest.

An export permit, on the other hand, must be issued unless the Commission makes a negative finding, and it may

not be doubted, that the authority of the Commission to grant an export permit is certainly as broad as its authority under the certificate section. Neither may it be doubted that one seeking a review here of an order granting an export permit is under at least as heavy a burden to overthrow the order as he would be if he sought by review to overthrow an order granting a certificate. Under § 3, the permit must be granted unless the Commission finds that it is not consistent with the public interest. Here the Commission has not found this, but the contrary, and the burden on petitioners to overthrow the finding and order is a heavy one. To discharge that burden they must point to a record showing, so clearly and positively as to override the Commission's finding, that the granting of the permit is in fact inconsistent with the public interest.

[4] The fact, of which petitioners seek to make so much, that on the first hearing the Commission, two Commissioners dissenting, refused the permit, and on the second hearing, without substantial additional evidence, granted it, is, we think, without significance here. A Commission, like a court, may, indeed should, change its findings and order if on rehearing it is of a different mind. If it does so change, our function on a review of its findings and order is to determine not

³ This provides:

"After six months from the date on which this act takes effect no person shall export any natural gas from the United States to a foreign country or import any natural gas from a foreign country without first having secured an order of the Commission authorizing it to do so. The Commission shall issue such order upon application, unless, after opportunity for hearing, it finds that the proposed exportation or importation will not be

consistent with the public interest. The Commission may by its order grant such application, in whole or in part, with such modification and upon such terms and conditions as the Commission may find necessary or appropriate, and may from time to time, after opportunity for hearing, and for good cause shown, make such supplemental order in the premises as it may find necessary or appropriate." 15 USCA § 717b.

CIA MEXICANA DE GAS v. FEDERAL POWER COM.

which of the two findings and orders was the best but whether, as claimed by petitioners, the findings and order under review are without evidence to support them. When the order, conditioned⁴ as it is, is considered in the light of the record and the full and careful opinion of the Commission, we can find no basis in the record for the conclusion urged upon us that its granting was arbitrary and unreasonable and contrary to the evidence and the statute.

[5] Nor can we agree with petitioners that they stand in any stronger position on their complaint⁵ that the hearing was unfair and was conducted in such disregard of the basic concepts of fair play" that they were denied a full and fair hearing.

Here, as in the attack on the findings as unsupported, petitioners base their claim entirely upon the fact that the Commission on original hearing found against the permit and on rehearing, with no new evidence except the Nichols report, reversed itself. Thus treating the case as though it was

the Nichols report which produced the result on rehearing, they argue that having been denied the right to cross-examine Nichols, the hearing has been unfair as to them.

A careful examination of the record, including the statement of the Commissioner Smith and his concurring opinion on rehearing, leaves us in no doubt that the statement of Nichols was given little or no weight and that the conclusion of the Commission was based upon a full consideration of the evidence as a whole and was entirely supported by it. If, therefore, we could agree with the petitioners that in receiving Nichols' statement, under the limitations imposed by the Mexican Government as to cross-examining him on it, was error,⁶ we could not agree that it was of such a prejudicial character as to make the hearing unfair.

[6] As to petitioners' second point, the refusal of the Commission to issue a subpoena for the witness, Grover Richard Adams, we agree with the Commission that his testimony would

⁴ Summarized these conditions are:

(a) Reynosa is authorized to export natural gas in accordance with the contract between Reynosa, as seller, and Gas Industrial, as buyer;

(b) The permit shall terminate upon failure of Reynosa to comply with any of the terms or conditions;

(c) The limitation of the exportation to natural gas produced in LaBlanc, North Weslaco, and South Weslaco fields in Hidalgo county, Texas;

(d) To 50,000 thousand cubic feet per day in whole but to be reduced by gas received from Mexican sources of gas supply received by Gas Industrial;

(e) Users of the gas in the U. S. are to receive preferential service over Gas Industrial, and the existence of the export permit shall not be ground for refusal of Reynosa or LaGloria, its parent corporation, to sell to users in the U. S.;

(f) The contract between Reynosa and Gas Industrial may not be changed without prior authorization of the Commission;

(g) The authorization herein granted may be modified from time to time or terminated upon further order of the Commission.

⁵ These are the acts and rulings relied on as unfair:

(1) The reception by the Commission of a statement by Nichols, a geologist employed by Petro Leos Petroleum Mexicanos, a corporate agency of the Mexican Government, as to the natural resources in the Mission field in Mexico under an agreement with the Mexican Government that he should not be subject to cross-examination.

(2) The failure of the Commission to make LaGloria, the parent corporation of Reynosa, a party to the proceeding.

(3) The failure of the Commission in refusing petitioners' request to subpoena Grover Richard Adams as a witness familiar with Mexican gas resources.

⁶ But see Wigmore, Evidence, 3rd ed. Vol. 8, pp. 746, 785, and Viereck v. United States (1942) 76 US App DC 262, 130 F2d 945.

UNITED STATES CIRCUIT COURT OF APPEALS

not have been relevant or material to the issues involved in the hearing in the certificate case, docket No. G-748. It follows, therefore, that the refusal to issue the subpoena was not prejudicial error.⁷

[7] Petitioners' final point that it was error not to make Reynosa's parent corporation, LaGloria, a party is wholly without merit. If LaGloria's interests were affected, it would be for LaGloria and not for petitioners to complain, but Reynosa is the applicant, it is the company which transports the gas, and the record presents no reason why LaGloria should have been made a party as one affected by the order. If petitioners' point is that the imposed condition as to the condition of priority of United States customers was by the order made applicable to LaGloria as well as Reynosa, and since LaGloria was not a party, it could not be made effective as to LaGloria, the simple answer is of LaGloria, parent of Reynosa, does not respect the condition, Reynosa's permit, being so conditioned, would immediately lapse.

[8] It remains only to consider the motion of Cia Mexicana that it be granted leave, pursuant to § 19 of the Natural Gas Act, 15 USCA § 717r, to adduce additional evidence before the Commission as to facts which have occurred since the hearing. The Commission opposes the motion on several grounds: (1) That the motion does not show that the evidence sought to be adduced was material and that there were reasonable grounds for failure to adduce it before the Commission as

provided for in the invoked section of the act; (2) that the evidence related to matters which have occurred since the conclusion of the proceedings may not be the subject of the motion; and (3) the motion does not present any grounds calling for the exercise in movant's favor of the court's discretion. The limitations and reservations in the authorization order complained of, particularly the provisions in it that the authorization may be modified from time to time or terminated upon further order of the Commission, make it plain that the Commission has the right to reopen docket G-595, the permit order, at any time for the purpose of determining whether the permit shall be further continued in force or terminated. If the matters with which the motion deals are material and if established will, or may, be effective to bring about a termination of the permit order, Cia Mexicana, or the state of Texas, or both, will be able to present them to the Commission on a motion to reopen as effectively as they could do if the matter were referred back by us for the taking of further testimony. Because this is so, we will, without determining any of the questions raised as to it, deny the motion to adduce additional evidence, without prejudice, however, to the right of the petitioners, on a proper showing, to reopen the proceeding before the Commission on the question of whether the permit should be modified or terminated.

The petitions for review and for leave to adduce additional evidence are denied.

⁷ National Labor Relations Board v. Friedrich (1940) 116 F2d 888.

NEW YORK PUBLIC SERVICE COMMISSION

Re Gas Available to Various Gas Corporations

Case 13637
June 17, 1948

APPPLICATION filed with Commission by certain groups requesting modification of restrictions on gas service for additional space-heating consumers; restrictions continued, with exceptions for hardship cases.

Service, § 146 — Grounds for denial — Shortage of gas supply — Knowledge of restrictions.

1. No exception should be made from a general rule restricting gas service for space heating in the case of a builder who knew of the restrictions in filed schedules before starting construction of cellarless houses but went ahead with their construction, p. 25.

Service, § 146 — Gas restriction during shortage — Statewide supply problem.

2. The problem of restricting gas service for space heating, in order to protect the supply of present customers, should in general be settled on a statewide basis and not upon the demands or needs of any particular locality, where there is a general shortage of natural gas supply in the state and the distributing utilities are largely dependent upon an uncertain supply from interstate producing and transmission companies, p. 27.

Service, § 146 — Gas restriction during shortage — Space heating.

3. Restrictions on gas for space-heating service to new customers should not be relaxed when this cannot safely be done if service to existing consumers is to be protected; and the Commission cannot gamble with the health and welfare of existing consumers by speculating that the next winter season may be mild and have few zero degree days, p. 27.

Service, § 146 — Gas restriction during shortage — Exception in hardship cases.

4. A gas utility required to continue restrictions on additional gas service for space heating, in order to protect the service of existing customers, may extend service where, because of special or unusual conditions or circumstances applicable to an individual occupant of premises, the failure to receive gas for space heating will endanger life or result in serious impairment of health of such individual, provided satisfactory proof of these facts is filed in writing, p. 29.

APPEARANCES: Sherman C. Ward, Acting Counsel (by Laurence J. Olmsted, Assistant Counsel), for the Public Service Commission; LeBoeuf &

Lamb (by James O'Malley, Jr.), New York city, Attorneys, for New York Power and Light Corporation and Central New York Power Corpora-

NEW YORK PUBLIC SERVICE COMMISSION

tion; William G. Kennedy, Syracuse, Attorney, for Syracuse Housing Authority; George T. Driscoll, Syracuse, Assistant Corporation Counsel, city of Syracuse; Francis L. McElroy and Gordon H. Mahley, Syracuse, Attorneys, for Syracuse Coal Exchange and Fuels Research Council, Inc.; Mrs. Carl Bye, Syracuse, President of Syracuse Association of Consumers; C. J. Pollatsek, Executive Secretary, Syracuse Builders Exchange, Syracuse; Almus Olver, Counsel, of Syracuse Social Agencies, Syracuse.

BREWSTER, Commissioner: This proceeding is one directed to all gas companies in the state of New York distributing manufactured gas, mixed gas, or straight natural gas and the purpose of the investigation is to determine the supply of gas which will be available for distribution in the winter season of 1948-1949, the peak requirements of the companies in order to meet the demands of their customers, and what steps the companies are taking to meet customer requirements.

This memorandum is only concerned with the application filed with the Commission by certain groups in the city of Syracuse requesting a modification of the existing provisions of the filed tariff schedules of Central New York Power Corporation, restricting the taking on of additional space-heating consumers in its Syracuse-Oswego division. This restrictive provision has been in effect since March 24, 1947, and is worded as follows:

"Restriction of Gas for Space Heating:

Gas service will not be supplied for space-heating purposes to premises

having facilities for the utilization of other types of fuel or to newly constructed premises except where the customer has purchased and has commenced the installation of heating equipment designed exclusively for gas fuel prior to March 24, 1947.

Whenever the facts establish with reasonable certainty that a customer hereafter has connected new or additional gas heating equipment, the company will discontinue all service to such customer upon such notice as is or may be required by law until the new or additional gas heating equipment has been disconnected.

This restriction shall remain in effect until June 30, 1948, unless such date is changed prior thereto."

Applications to modify or terminate the existing restrictions of Central New York Power Corporation applicable to its Syracuse-Oswego division have been filed by the following: Hon. Frank J. Costello, mayor of the city of Syracuse; Syracuse Housing Authority; Syracuse Real Estate Board, Inc.; Masters Plumber's Association; Syracuse Society of Architects; Better Builders Association of Onondaga, Inc.

The specific change suggested by petitioners herein, in the restriction filed by the Central New York Power Corporation with its filed schedules applicable to the Syracuse-Oswego division, is that the restriction permit and require the Central New York Power Corporation to provide gas service for space heating where the buildings are not more than two stories high, contain no more than 2-family units, and contain no more than 1,000 or 1,200 square feet per dwelling unit.

In response to these petitions a hear-

RE GAS AVAILABLE TO GAS CORPORATIONS

ing in this proceeding was held in Syracuse on June 7, 1948.

Representatives of each of the groups filing the petitions for modification of the restriction provision, and several representatives of civic groups testified.

It is clear from the record that the lack of housing units in Syracuse for those of moderate means is an acute and disturbing problem.

Mr. Olver, director of the Family Society of Syracuse, which organization is a member of the Council of Social Agencies, stated that housing was the No. 1 social problem of Syracuse. Reverend Calvin M. Thompson, Jr., chairman of the Mayor's Emergency Committee on Housing and vice chairman of the Syracuse Housing Authority, testified to the same effect. Syracuse is one of the most active industrial cities of the country and enjoys a high percentage of employment, which has resulted in an increase in population in Syracuse and environs and has created a great shortage of housing.

All of the testimony offered by the several petitioning groups was directed to establishing the fact that single or double family units of limited floor space could be constructed cheaper if gas-fired units were installed than where coal-fired units are provided. The preponderance of testimony of the building constructure witnesses is that the cost of gas-fired heating units is approximately \$150 to \$200 less per family unit than coal-fired furnaces. These witnesses also stated that additional saving resulted because with gas-fired heating units it was not necessary to construct a cellar, whereas with coal furnaces a cellar was required.

It appears from the record that the selling price of a small single-family home can be reduced by about \$500 if gas heating equipment is installed in place of coal furnaces.

While oil-heating units are cheaper than coal furnaces both in the purchase price of the unit and the additional saving by omitting the construction of a cellar, the cost of installing oil-heating units is somewhat more than gas units because it is necessary to install oil tanks for the storage of fuel oil. The difference in cost of oil-heating units and gas-heating units was not clearly established, but from all of the record it would appear that the saving in cost would not be in excess of \$200 and may be considerably less than that. The principal objection offered of the installation of oil-heating units appears to be the scarcity of oil and that no firm commitment can be obtained by new customers for a supply of fuel oil for the winter season of 1948-1949.

It appears from the record that the lowest selling price of the dwellings presently being constructed is about \$8,000 and that this price is more than veterans of the late war can afford to pay even with government assistance. It was the opinion of Reverend Thompson, chairman of the Mayor's Emergency Housing Committee, that any material saving in selling price of single-family dwellings would stimulate the number of such dwellings constructed and help to relieve the present housing shortage. However, it would appear from the testimony of the contracting witnesses that a large number of single and 2-family units are now being constructed.

[1] One builder testified that he and

NEW YORK PUBLIC SERVICE COMMISSION

his partner were building houses of one story, $4\frac{1}{2}$ rooms, without cellars, and that about the only type of heating equipment which could be installed is gas-heating units. These houses are to be sold at a minimum of \$8,000. He suggested that the purchaser of one of these homes could use bottled gas although he stated that the cost of such bottled gas would be considerably more than gas distributed by the Central New York Power Corporation. This contractor witness admitted that he knew of the restrictions in the filed schedules of the Central New York Power Corporation before starting construction of these cellarless houses, yet he has gone ahead with their construction. There is no good and equitable reason why any exception from the general rule should be made in this case. The additional cost of bottled gas for space heating would be large and would offset in whole, or in part, the additional cost of a coal-burning furnace, if the bottled gas in the quantity required could be obtained. Fair dealing would seem to require that the builder inform any prospective purchaser of these facts.

Summarizing the testimony of the witnesses urging the modification of the restriction, it appears that because of the increase in the material and labor costs small, one-family or 2-family, residences presently constructed are being placed on the market at prices which the average worker, veterans, or otherwise, cannot afford to pay. The lowest selling price of such small single family homes appears to be \$8,000. If gas heat can be substituted for coal heat the cost can be reduced by approximately \$500 per dwelling. If oil heat is supplied in place of coal heat

the saving will be material but not quite as much as in the other case.

Position of Central New York Power Corporation

John T. Kimball, a vice president of the Central New York Power Corporation, testified that while his company is sympathetic with all the attempts to relieve the housing shortage, it is his opinion and that of the company management that the existing restrictions applicable in the Syracuse-Oswego district should be continued for the winter season of 1948-1949. He stated that in his opinion the first obligation of the company is to provide gas service to its present customers. He set forth the sources of the natural gas supplied by the New York State Natural Gas Corporation to Central New York Power Corporation at Syracuse. He referred to the program which the Consolidated Gas System has for increasing its capacity for delivery of gas to its customers, including the sixteen customers of the New York State Natural Gas Corporation in the state of New York. After reviewing the status of the gas-supplying companies, he said that in his opinion there was so much of uncertainty as to any increase in the quantity of natural gas supplied New York state customers, that he felt the present restrictions should be continued until there was some certainty of an increase in supply which would permit the taking on of additional house-heating customers. Mr. Kimball referred to the clause in the contract of the Central New York Power Corporation with the New York State Natural Gas Corporation, which required the Syracuse company to curtail gas service to industrial cus-

RE GAS AVAILABLE TO GAS CORPORATIONS

tomers in the Syracuse-Oswego area in case of a shortage in supply, and stated that if, as a result of taking on additional house-heating customers it became necessary to shut off gas service to industrial customers, such action might result in widespread unemployment which would be reflected in the loss of wages and might have a severe effect economically on those employed in industry, including veterans of the late war, and very possibly such adverse effect would amount to more than the possible saving in the building of the dwelling for gas heating as proposed.

Mr. Kimball was asked as to the use of the water gas plant at Hiawatha boulevard. He stated that such plant if operated full time could supply only 17 per cent of the gas required in the Syracuse-Oswego area by the 75,000 customers of the company. He pointed out that this plant was an emergency plant only, that it required a great deal of oil in the process of manufacturing gas, and that such oil for gas making was very difficult to obtain. He also stated that the cost of such gas manufactured in the water gas plant was approximately four times the cost of natural gas purchased from the New York State Natural Gas Corporation.

Statewide Problems

[2,3] Commissioner Eddy, in a memorandum in Case 13684, a proceeding as to conservation of gas by the New York State Electric and Gas Corporation, expressed very clearly the policy which the Commission believes must govern its determination in proceedings such as the one now under consideration.

"This problem is more than a purely

local problem of one district or of one company; and in general, it should be settled on statewide basis and not upon the demands or needs of any particular locality. It, therefore, seems desirable to direct the company to continue their existing restrictions until May 1, 1949. If in the course of the general investigation the Commission relaxes the restrictions to provide the use of natural gas for space heating in new construction, it may then consider modifying that restriction."

It appears so obvious that the Commission must consider the problem of the conservation of the natural gas supply upon a statewide basis that prolonged discussion of the reasons therefor seems unnecessary. There has been a general shortage of natural gas supply in New York state and throughout the Appalachian area which was recognized when the restrictions were placed in effect. Only a small portion of the natural gas supply of New York state (approximately 20 per cent) comes from wells within the state. By far the greater part of the natural gas consumed in this state comes from the southern fields and is delivered to distributing companies within the state principally by four supplying corporations, the Columbia Gas System, the Consolidated Gas System, the National Fuel Gas System, and the North Penn-Allegany System. Of these the New York State Natural Gas Corporation and the Columbia System are much the largest.

Mr. Peck, division manager of the Columbia System at Pittsburg, and Mr. Partridge, assistant to the vice president in charge of operations of Columbia Engineering Corporation, the service company of the Columbia

NEW YORK PUBLIC SERVICE COMMISSION

Gas System, both testified in this proceeding. Although the Columbia System has completed the installation of a pipe line from Coatsville, Pa., to Rockland county which will relieve the load on the Home Gas Company line from the west, neither of these witnesses gave any encouragement to the taking on of new construction by the distributing companies receiving gas from the Columbia System and Mr. Peck, who is the president of the Binghamton Gas Works, which company is supplied with natural gas by the Home Gas Company, a Columbia System subsidiary, when asked if he advocated a modification or relaxation of the restriction in effect for that company to permit the taking on of additional space-heating consumers, stated: "I am sorry we cannot take on any more this year, that is the answer."

Mr. Borger, president of the New York State Natural Gas Company, expressed some hope that the distributing companies served by that company might get more gas provided certain improvements of that company's transmission pipe line could be carried out. These improvements of transmission facilities include additional pipe lines and compressors and there is no assurance in the record that either can be provided in time for the coming season. A careful review of Mr. Borger's testimony reveals that no one can say with exactitude how much gas his company will have with which to supply its customers in New York state during the coming season. The amount of natural gas which the New York State Natural Gas Corporation will be able to deliver to its customers in New York state is dependent upon

the amount of gas which the producing and transmission companies to the south of the Consolidated System deliver to that system and upon the demands that distributing companies in Pennsylvania and Ohio make upon that supply.

It is not necessary to set forth in detail all of the testimony and exhibits received in this proceeding. Review of such testimony and exhibits leads to the conclusion that no relaxation of the existing filed restriction of the Central New York Power Corporation can safely be made at this time if the service to existing consumers is to be protected. It may be that the winter season of 1948-1949 may be mild and have few zero-degree days, but that is a matter of speculation and the Commission cannot gamble with the health and welfare of existing consumers of the company.

It may also very well be that the New York State Natural Gas Corporation can deliver to its customers in New York state, including the Central New York Power Corporation, in the 1948 to 1949 season somewhat more gas than was delivered in the 1947 to 1948 season, giving consideration to gas placed in storage wells during the summer of 1948. However, it must be borne in mind that the requirements of Central New York Power Corporation aside from gas service to new space-heating customers, will be greater in the 1948-1949 season than in the past season. The Central New York Power Corporation is required to supply gas for cooking and hot-water heating to new applicants and that in itself, without any increase in the number of space-heating customers, will increase the gas requirements of the

RE GAS AVAILABLE TO GAS CORPORATIONS

company. New construction now being carried on in the Syracuse-Oswego division calls for gas service for cooking and hot water heating and such gas service is not prohibited by any restriction in the company's schedules. To meet this added demand and the demand of its present customers the company will require more gas than was required in the 1947-1948 season. Even though somewhat more gas may be delivered in the 1948-1949 season than in the past season to the Syracuse-Oswego division by New York State Natural Gas Corporation there is no definite assurance in the record in this case that there will be a sufficient gas supply to justify relaxing the present restrictions except as hereafter suggested. On the other hand, there is definite evidence in the record that the gas requirements of Central New York Power Corporation for the 1948-1949 season will be materially greater than in the past winter season even without additional space-heating consumers.

[4] The restriction here under consideration is one which the company filed with the Commission and which

the Commission permitted to take effect. Under this filed restriction the company cannot take on any additional space-heating customers even though satisfactory proof is presented, that because of special or unusual conditions or circumstances, the refusal of gas service will result in danger to life or in serious impairment of health.

Recommendation

I recommend that the company be given permission to file the following modification to its present restriction:

The prohibitions herein directed shall not apply, where because of special or unusual conditions or circumstances applicable to an individual occupant of the premises, the failure to receive gas for space heating will endanger the life or result in serious impairment of the health of such individual, provided satisfactory proof of these facts shall have been filed in writing with the Central New York Power Corporation.

All other provisions of the existing restrictions should be continued in effect to May 1, 1949, unless otherwise ordered by the Commission.

GEORGIA PUBLIC SERVICE COMMISSION

Re Gas Light Company of Columbus

File No. 19391, Docket No. 9043-A
July 15, 1948

APPPLICATION by gas company for authority to issue securities;
granted subject to conditions.

Security issues, § 123 — Conditions — Dividend restriction.

Authority for issuance of securities to acquire property at a price reflecting a substantial amount of intangible capital in excess of original cost of tangible plant should be contingent upon the condition the company shall

GEORGIA PUBLIC SERVICE COMMISSION

not pay dividends on common stock until such time as the earned surplus balance is equal to or exceeds the balance representing intangible plant, and further, that the earned surplus created from the dividend limitation shall be reserved to the extent of the remaining intangible plant balance until this balance is fully amortized or otherwise disposed of.

APPEARANCES: Foley and Chappell, Counsel, C. F. Williams, H. J. Dickneite, and Robert S. Lyman, for the company; N. Knowles Davis, Chief Engineer, for the Commission.

By the COMMISSION: Gas Light Company of Columbus filed a petition with the Commission on June 18, 1948, requesting authority to issue securities for the purpose of enabling it to purchase for the sum of \$2,300,000 the physical gas properties presently owned and held by Georgia Power Company, representing gas distribution plants in Americus and Columbus, Georgia, and the balance of the proceeds from the sale of the securities to be used for purchasing additional equipment and property, for the improvement of facilities, and to maintain and expand gas service and provide working capital. The securities which the applicant requests authority to issue are 125,000 shares of common stock \$5 par value, 12,500 shares of preferred stock \$50 par value, 6 per cent cumulative, and \$1,750,000 principal amount of first mortgage 3½ per cent sinking fund bonds due in 1973.

The company was directed to publish notice of the application in two issues of the Columbus Ledger stating the time and place of the public hearing to be held thereon before the Commission, and it appears that proper notice has been so published. No one appeared at the hearing nor has the Commission received any letters in opposition to the authority prayed for.

According to the petition and evidence adduced at the hearing, the Georgia Power Company has been required by order of the Securities and Exchange Commission under the terms and conditions of the Public Utility Holding Company Act of 1935, to divest itself of its gas properties. The property was offered at competitive bidding and the purchase proposal submitted by the applicant in this case has been accepted by Georgia Power Company, which offer represents a base price to be paid for the properties of \$2,300,000 in cash, subject to certain closing adjustments in conformity with terms of the purchase agreement. The securities are proposed to be issued in order to provide the necessary cash to purchase the properties and to provide additional cash working capital for the expansion and improvement of the gas distribution systems in Columbus and Americus. The total cash to be received from the sale of the securities will be \$3,000,000. It was testified that it will be necessary for the Gas Light Company of Columbus to provide service to approximately 1,000 new customers per year and the estimated cost of this expansion program was stated to be approximately \$200 per customer, thereby requiring some \$200,000 per annum of capital required to meet the present and future demand for gas service. The additional amount of securities requested to be authorized over and above the base purchase price, plus closing ad-

RE GAS LIGHT COMPANY OF COLUMBUS

justments and plus expenses of \$40,000 is to be used to finance necessary capital additions.

At the request of the Commission's staff, the Gas Light Company of Columbus has submitted a pro forma income statement and pro forma balance sheet to show the earnings of the company as related to fixed charges and dividend requirements upon the securities to be issued and to show the capitalization of the company as of the date of its inception. The pro forma balance sheet shows a depreciation reserve in the amount of \$477,000 which is substantially in excess of the reserve balance presently on the books of Georgia Power Company. This reserve requirement of \$477,000 was determined by a study and appraisal of the properties as of December 31, 1947, by Mr. Jay Samuel Hartt, consulting engineer. Reflecting this more adequate depreciation reserve balance and stating tangible property at original cost when first devoted to public service in accordance with the Uniform System of Accounts prescribed by the Commission, creates a Utility Plant Acquisition Adjustment balance of \$975,000, representing the difference between the price paid for the properties and the recorded original cost thereof. The company proposes to amortize this intangible plant balance over a period of twenty-five years at the rate of \$39,000 per annum which appears reasonable.

It may appear at first that a total security authorization of \$3,000,000 as requested is somewhat large when compared to the purchase price or to the original cost of the tangible plant. This Commission has no authority over prices paid for utility plant and,

therefore, no approval is requested of the Commission of the price paid for these physical assets. The company insisted that it will require additional capital over and above the purchase price for the financing of improvements and additions to its plant and equipment, and that, in view of the large demand for gas service, the amount requested is not too large. It appears, however, that some condition should be stipulated with respect to the issuance of securities requested in view of the very substantial amount of intangible capital created in Account 100.5 "Utility Plant Acquisition Adjustment." Since this is entirely intangible plant, not specifically represented by physical property, it is the opinion of the Commission that a restriction should be placed upon the common stock dividends to be paid by the new company until such time as the earned surplus balance is equal to or exceeds the balance representing intangible plant, and further, the earned surplus of the company created from the limitation on common stock dividends should be reserved to the extent of the remaining intangible plant balance at all times until this balance is fully amortized or otherwise disposed of and this order will so provide.

It appears that the issuance of securities as prayed for falls within the spirit and intent of § 93-414 of the 1933 Code of Georgia and should be approved under the conditions above referred to. Wherefore, it is

Ordered that Gas Light Company of Columbus be and it is hereby authorized to issue and sell no more than \$1,750,000 principal amount of first mortgage 3½ per cent sinking fund bonds due in 1973 at not less than 100

GEORGIA PUBLIC SERVICE COMMISSION

per cent of the principal amount thereof.

Ordered further that Gas Light Company of Columbus be and it is hereby authorized to issue and sell not more than 12,500 shares of 6 per cent cumulative preferred stock with a par value of \$50 per share and not more than 125,000 shares of common capital stock with a par value of \$5 per share, all of said stock to be sold at not less than the par value thereof.

Ordered further that the approval herein granted is contingent upon the condition that Gas Light Company of Columbus shall not pay in common stock dividends during any calendar or fiscal year more than 50 per cent of the earnings of the company actually available for common stock dividends from earnings during such period until such time as the earned surplus balance of the company is equal to or exceeds the balance in Account 100.5 "Utility Plant Acquisition Adjustment," and further that the earned surplus so created, reserved and restricted shall thereafter be at all times equal to or more than the remaining balance in Account 100.5. This condition as stipulated shall remain in full force and effect until the balance in the Acquisition Adjustment Account is fully amortized or otherwise disposed of, but as soon as the earned surplus balance of the company equals the Acquisition Adjustment Account balance, the dividend restriction on common stock will then be limited only to the condition that the earned surplus balance must not be reduced below the balance in Account 100.5 by the payment of dividends on common stock.

In the event inadequate earnings

should cause the earned surplus balance to be reduced below the Account 100.5 balance at any time, the dividend restriction on common stock shall again become operative until such time as the earned surplus balance again equals or exceeds the Account 100.5 balance.

Ordered further that Gas Light Company of Columbus shall amortize the initial balance of \$975,000 in Account 100.5, "Utility Plant Acquisition Adjustment," over a period of not less than twenty-five years by equal annual charges of not less than \$39,000.

Ordered further that Gas Light Company of Columbus file a report with the Commission immediately after the sale of the securities herein authorized or within ninety days whichever is earlier, setting forth the amount of securities sold, the proceeds realized therefrom, the costs incurred by principal items, and the journal or other accounting entries made by the company, reflecting the sale of securities, the purchase of physical assets and the disposition of funds therefrom.

Ordered further that none of the proceeds from the sale of the securities herein authorized shall be used to pay a bonus to anyone, nor shall any of the proceeds be used to pay dividends on the stock authorized herein, but shall be used for the purposes outlined in the petition and for no other purpose.

Ordered further that the Commission retains and keeps jurisdiction of this matter for the purpose of issuing such further order or orders as to the Commission may seem meet and proper.



Industrial Progress

A digest of information on new construction by privately managed utilities; similar information relating to government owned utilities; news concerning products, supplies and services offered by manufacturers; also notices of changes in personnel.



Gas Industry Shows Gain in Revenues and Customers

TOTAL revenues from sales of gas by utilities amounted to about \$358,000,000 in the second quarter of 1948, a gain of 7.5 per cent over the comparable quarter in 1947, according to the American Gas Association. Revenues from industrial sales represented the highest percentage gain, rising 10.6 per cent, while residential and commercial revenues increased 6.3 per cent and 7.2 per cent over the like 1947 period respectively.

On June 30, 1948, the gas utility industry was serving 21,900,000 customers, equivalent to a gain of 4 per cent over a year earlier. Residential customers totaled 20,400,000 as compared with 19,600,000 customers in 1947, an increase of 4 per cent. Commercial and industrial customers were up 4 per cent and 2 per cent respectively.

For the 12-month period ending June 30, 1948, revenues for all three branches of the industry totaled \$1,475,000,000, an increase of 11.6 per cent over revenues of \$1,322,000,000 in the 12 month period ending June 30, 1947.

\$90,318,773 Program Proposed By Trunkline Gas Supply

THE TRUNKLINE GAS SUPPLY COMPANY has applied for authority to build a 768-mile natural gas pipe line from Lake Charles, Louisiana to Keokuk County, Iowa.

Total cost of the project is estimated at \$90,318,773.

\$63,000,000 Program Planned By Public Serv. Co. of Colorado

THE PUBLIC SERVICE COMPANY OF COLORADO is contemplating a \$63,000,000 program covering a five-year period beginning with 1948. Of this amount, \$15,000,000 will be spent in 1948, a like amount in 1949, and about \$11,000,000 a year in 1950, 1951, and 1952.

Inland Steel Offers Another "Comforteer" Gas Heater

THE "Comforteer Radiant - Circulator" gas heater, a new companion model to "Comforteer Circulator" gas heater has been introduced by the Inland Steel Container Company.

According to the manufacturer, this new heater combines all the features of the Comforteer Circulator which supplies an abundance of circulated heat, but in addition it provides

direct, penetrating, radiant heat. Polished reflectors and six clay radiants in the new heater throw direct rays in four directions.

Additional information on Inland "Comforteers" can be obtained by writing to the Inland Steel Container Company, Cortez & Bienville streets, New Orleans 19, Louisiana.

R-R Introduces New Line Of Bookkeeping Machines

A NEW line of bookkeeping machines, designated the "Foremost," 500 and 600 series, has been announced by Remington Rand, Inc. According to the manufacturer, these are the first bookkeeping machines fashioned in the modern mode of truly functional design.

Innovations include a streamlined, non-glare case which eliminates eye-strain, and finger-grooved, organ-type keys for simpler operation. Optical lucite which covers the registers magnifies all figures for increased visibility, and the special insulated, noise-absorbing, Aphonic stand reduces operator fatigue and

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prolongs machine life. All "Foremost" models are completely electrified. Model 685 computes and prints balances automatically, while the entire line provides automatic tabulation, automatic proofs, and automatic carriage return and line spacing. Front feed insertion and collation allows "one-procedure" operation.

Two, three, or more related forms may be produced at one time. And many specific applications may be handled on one machine, since the operator can add, remove, or reposition registers at will in a matter of seconds. The "Foremost" series has been designed by its ultimate users. Trained representatives of Remington Rand spent several years collecting ideas on management requirements from presidents, controllers, office managers, and other executives. The recommendations of these business administration leaders were, whenever possible, incorporated in the final result.

Further information may be secured by writing to Remington Rand, Inc., 315 Fourth avenue, New York 10, New York.

Western-Holly Continental Ranges "Custom Designed"

CUSTOM-DESIGN features at standard production-model prices highlight the new Western-Holly Continental line of gas ranges which Western Stove Company recently introduced to the public.

The basic models in the Continental "43"

series are a 4-burner divided-top range, a 4-in-line burner arrangement with front work space, and a 6-burner range, according to Henry Honer, president. The D-475-L, for example, is the basic 4-burner divided-top model. It is equipped with high barbecue broyl oven, full 18-inch baking oven, low broiler, and fully automatic controls. Built-in light and convenience outlet is standard in it as in all other models. To this basic D-475-L design may be added a concealed griddle, automatic cooking clock, Telechron signal clock, oven windows and lights—singly or in combinations.

Although the griddle is available only on the 4-burner divided-top model, both 4-in-line and 6-burner tops are available with customer's choice of all the other features. Prices of extras are constant for all models, singly or in combination.

All possible combinations of these on the three basic ranges actually give 104 different delivered models.

These ranges have been awarded the Good Housekeeping Seal of Approval, and are built to CP specifications. All are available for L.P., natural, or manufactured gas.

Speco Increasing Rustrem Production Facilities

EXPANSION of its Rustrem production facilities by purchase of a 15,000 sq. ft. building at 7308 Associate avenue, Cleveland, is announced by Speco, Inc., manufacturer of in-



The FIRST BOSTON CORPORATION

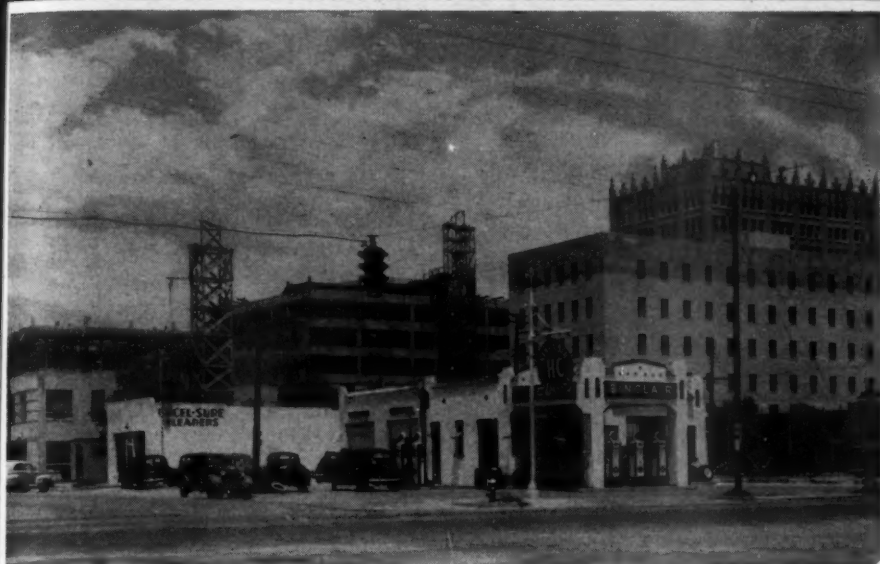
We have been identified, for many years, with the underwriting of public utility bond and stock issues. We welcome discussions with Public Utility Executives relating to financing the requirements of their companies for new capital.

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We are helping in the building of a young and vigorous region

The fifty cities and towns we serve . . . from Odessa and Midland (Texas) on the south to Clayton (New Mexico) on the north . . . are growing with amazing rapidity.

The example shown in the photo is Midland, where our photographer in one shot caught *three* major construction projects. In the background is the beautiful 12-story Petroleum Building.

Our towns are building some of the biggest and finest schools and churches and hospitals you ever saw . . . new homes by the hundreds . . . and commercial and industrial establishments of almost every kind. To serve this spectacularly-growing region, we too are building. We are proud of the role, both past and present, we have been privileged to play in the development of this region.

AMARILLO GAS COMPANY

Amarillo, Texas

CLAYTON GAS COMPANY

Clayton, New Mexico

DALHART GAS COMPANY

Dalhart, Texas

WEST TEXAS GAS COMPANY

Lubbock, Texas

dustrial paints, maintenance products, and automotive chemicals.

The new facilities, according to J. O. Vinney, president, will be used almost entirely for the manufacture of Rustrem, a penetrating and sealing anti-rust paint which is applied directly over rust without sand-blasting or scraping the surface.

Westinghouse Transformer Shop Being Constructed by Ebasco

A NEW transformer-tank shop under construction for the Westinghouse Electric Corporation at Sharon, Pennsylvania, is scheduled for completion next January. The new shop will substantially increase the corporation's output of large-size electrical transformers.

Ebasco Services Incorporated, New York, are the designers and constructors of the project.

Lewis-Shepard Introduces Telescopic "Jackstacker"

LEWIS-SHEPARD PRODUCTS, INC., Watertown, Massachusetts, presents the latest addition to their "Master" line of materials handling equipment—the Telescopic "Jackstacker."

Telescopic "Jackstacker," 100 per cent elec-

trically operated, with capacities up to 4000 lbs., is designed particularly for the movement and high stacking of materials on skid platforms, pallets, or in sectional bins. Telescopic feature allows passage through doorways and under trusses or other overhead obstructions.

Counterweighted, straddle-type, open-end base, and platform-type models are available for handling single or double-faced pallets, as well as skids or platform-type containers.

G-E Offers Miniature Appliances To Aid in Planning Kitchens

A COMPLETE set of miniature plastic appliances is being made available by the General Electric Company to assist power companies, retailers, architects, builders, and others in planning kitchens and laundries.

Called the Applianset, the kit consists of 77 major and traffic appliances, cabinets, and kitchen furnishings scaled one inch to the foot and made of light, durable polystyrene by the G-E plastics division. Also included are four metal walls, four windows, two doors, a 16-page instruction book and a specially scaled measuring ruler.

Appliansets are available through General Electric major appliance distributors at a price of \$19.90.

A-C Expands Transformer Manufacturing Capacity

ALLIS-CHALMERS has just announced completion of the new Columbus plant at the company's Pittsburgh works, boosting Pittsburgh transformer manufacturing capacity 40 per cent.

The new plant is the largest single item in a \$2,000,000 expansion program now practically complete, and will be devoted to the processing of steel previous to assembly in transformers in the other four plants located in an eight-acre area on Pittsburgh's north side. Over 116,000 square feet of floor area have been added since the expansion program began in July, 1947. Plans call for an additional 600 new employees to bring the total to 2,900 men.

Catalogs and Bulletins

Market Outlook for Clothes Dryers

A 5,000-WORD summary of the market outlook for home automatic clothes dryers was issued recently by the research department of The Curtis Publishing Company.

The 14-page report reviews the development of both gas and electric dryers, and discusses operating costs, factors in determining purchase, and advantages and disadvantages that have been claimed for both types of dryer.

The study says that from 2,600,000 to 2,800,000 dryer units is a "reasonable estimate" of what the industry can sell in the next six years.

Included in the study are tables showing washing machine and ironer ownership by

Perfect Mates!



With or Without Nut Katerlows

This Sherman Connector assures tight, permanent, **dependable** wire connections, without excessive wrench torque, because threads on both body and nut are machine cut, and checked with precision gauges to mate perfectly.

H. B. SHERMAN MFG. CO.
Bottle Creek, Mich.

OKLAHOMA CITY GETS

THE NEW LOOK

July 28, 1948, marked the opening of the newly remodeled office of the Oklahoma Natural Gas Company located in Oklahoma City. Here is a brief picture story emphasizing the "new look" in modern architecture, display and other facilities.



The ultra modern lobby displays to the greatest advantage new gas appliances. The curved ceiling and muted colors add warmth and graciousness to the room.

The beautiful bamboo and ivy Culina Room offers Oklahomans adequate space and accommodations for large parties and club meetings.



Here is a view of one of the display windows containing a New Freedom Gas Kitchen complete with all kitcheneering and laundering facilities.

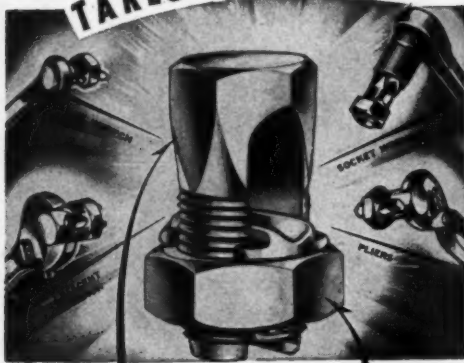


of the new
mular 65½
porcelain ena-
son sign with
1800 feet of
tubing.

YES, the PENN-UNION Connector

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by
UNDERWRITERS
LABORATORIES

TAKES THEM ALL.



LARGER SURFACES for the WRENCHES—a good-sized HEX Top and Bottom

The men who use connectors appreciate the better design of the Penn-Union—especially when they have to make a splice in close quarters, or any unhandy location.

Better Design is a feature of the entire Penn-Union line, which includes Tees and Taps, Straight Connectors, Terminals, Grounding Clamps, and many more fittings... every one thoroughly dependable, mechanically and electrically. *Preferred by leading users, who have found that "Penn-Union" on a fitting is their best guarantee of unfailing service.*

Sold by Leading Wholesalers

PENN-UNION ELECTRIC CORP.
ERIE, PA.

The COMPLETE Line of Conductor Fittings

PENN-UNION
CONDUCTOR FITTINGS

OCT. 7, 1948

Mention the FORTNIGHTLY—It identifies your inquiry

states, as well as estimated potential cloth dryer ownership.

A limited number of copies of the report are available upon request.

Induction Motors

THE Electric Machinery Mfg. Company has published two new bulletins. "Heavy-Duty" squirrel-cage induction motors. Cut-away and sectional drawings show details of welded frame construction, protective design, modern bearings and multi-layer insulation. Bulletin 1300-PRD-190 covers 2-pole and 4-pole motors. Bulletin 1300-PRD-189 covers 4 or more pole motors. Copies may be obtained from the manufacturer, Minneapolis 13, Minnesota.

Rural Manual

PUBLICATION of a new Rural Manual has just been announced by Locke Incorporated, Baltimore, Maryland. The Rural Manual contains characteristics and dimensions of all Locke Pole Line Hardware, Insulators and associated materials used on REA projects.

Copies may be obtained by writing to the merchandising division, Locke Incorporated, P. O. Box 57, Baltimore 3, Maryland.

Modern Window Coverings

"INSULATION BY REFLECTION" describes modern window coverings. This 12-page booklet discusses the scientific technique of combining heat and light control to assure maximum comfort and maximum efficiency in plants, stores, offices, and homes. Copies may be obtained from Aluminum Venetian Blind Company, 7461 South Chicago avenue, Chicago, Illinois.

Metallizing Equipment

THE METALLIZING ENGINEERING COMPANY, Inc., 38-14 30th street, Long Island City 1, New York, announces a new catalog of its complete line of metallizing equipment and supplies.

According to the manufacturer, it is the most complete catalog of metallizing equipment, accessories, and supplies ever to be offered to industry. It covers metallizing guns for every purpose, air and gas controls, spray booths and dust collectors, blast machines and nozzles, and air compressors.

Copies of "The Best of Everything for Metallizing" may be obtained from the manufacturer.

Personnel Changes

Rockwell Manufacturing Company

W. F. ROCKWELL, JR., president of Rockwell Manufacturing Company announced the appointment of L. A. Dixon to the vice presidency of the company's meter and valve divisions.

Mr. Dixon is well known in the utility, petroleum, and municipal markets, having done considerable field work in the promotion of the company's products for the past twenty years.

"Helping Build West Texas and New Mexico"

... our **SLOGAN** and our **PLEDGE**

Southern Union has grown up with the Southwest during the past twenty years and pledges its continued cooperation in the further development of this resourceful empire.

Today, Southern Union is providing Natural Gas service to more than 80,000 consumers . . . both domestic and industrial . . . in twenty-nine New Mexico and West Texas cities and towns.

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Wink	Farwell

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(City Gate)	Lovington
Santa Fe	Bernalillo
Roswell	Loving
(City Gate)	Dexter
Carlsbad	Hagerman
Artesia	Lake Arthur
Clovis	Los Lunas
Portales	Tesuque
Tucumcari	Texico
Farmington	

Southern Union Gas

HOME OFFICE: BURT BLDG., DALLAS, TEXAS

DON'T MISS THIS "HIT" SHOW!

"Pittsburgh's" Store Modernization Caravan



WHEN the Pittsburgh Caravan reaches your locality, make sure that you attend one of its "performances."

Here's a unique store modernization and store-lighting show. Two truck-driven 26-foot trailers are utilized in the caravan—each trailer containing six faithfully reproduced scale-models, like the one below, showing the latest trends in store front and interior designs and in modern lighting techniques.

Each of the twelve miniature models is life-like in every detail. A wide variety of businesses are covered, with their individual problems ingeniously resolved.

If you are interested in new and more effective ways of building and lighting retail stores, you'll find the Pittsburgh Caravan well worth seeing. Since the tour will last many months, advance publicity will inform you when it will reach your vicinity. Watch for it.



"PITTSBURGH"

STORE FRONTS AND INTERIORS



PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

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Greetings
to the Delegates and Guests
attending the
American Gas Association Convention
Atlantic City, New Jersey
October 4 - 8, 1948
from the
Southern Natural Gas Company
Watts Building
Birmingham, Alabama

AN ARCHITECT GOT A MONEY-MAN TO ADMIT,

"I never thought of floors in relation to earning power"

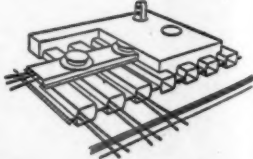


HERE'S WHAT THE ARCHITECT SHOWED



Why Q-Floor reduces building time 20 to 30%.

Q-Floor is steel subfloor, delivered pre-cut. Two men can lay 32 sq. ft. in 30 seconds. Construction is dry, incombustible. The Q-Floor is immediately used as platform by other trades. No delay for wet materials. No forms, no falsework, or fire hazard. Even when steel is slow in delivery, steel is still faster. You must allow time for demolition and excavation. By that time, the steel is ready. Steel construction gives a faster completion date. Completion time, not starting time, determines how soon your investment pays off.



Why Q-Floor keeps a building modern.

The steel cells of Q-Floor are crossed over by headers for carrying the wires of every electrical service, regardless of how many new business machines may be invented. An electrical outlet can be established on every six-inch area. It requires but a small hole, takes literally only a few minutes. No muck with trenches. Tenants can have as many outlets, changed as often and located exactly, as they please. Such permanently flexible floor plans keep a building permanently modern. The exterior may grow old-fashioned, but with live arteries of power in the floors, the building itself will never be electrically outmoded.

"Floors are such a small fraction of total cost, one tends to forget that floor space is actually what a building is for. You say a steel Q-Floor costs less than the carpet to cover it? Yet it provides electrical availability over the entire exposed area of the floor. And the steel construction, being dry, reduces building time 20 to 30%. These are factors any investor can easily translate into terms of money saved. They mean more revenue over the years and earlier revenue right from the start. Let's look at the details—"

Write for the simple facts—

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World-Wide Building Service

A GREATER VALUE THAN EVER—

YES, OUR CUSTOMERS ARE FINDING GAS SERVICE TO BE A GREATER VALUE THAN EVER. IN THE FACE OF EVER-INCREASING COSTS, MOST OF OUR GAS CUSTOMERS PAY NO MORE, IN SOME INSTANCES LESS, THAN BEFORE THE WAR. THE COST OF THIS ESSENTIAL SERVICE NOW REPRESENTS A SMALLER PERCENTAGE THAN EVER OF OUR AVERAGE CUSTOMER'S TOTAL BUDGET.



THE UNITED LIGHT AND RAILWAYS CO.

New Electric Health Appliance for home and office



The new **FRESH'ND-AIRE** ROOM CONDITIONER AND HUMIDIFIER

It's plugged in during SUMMER

Tests prove that the new Fresh'nd-Aire Room Conditioner and Humidifier removes as much as 97% of ragweed pollen from room. Thousands of hay fever victims are enthusiastic about this remarkable new appliance. The new "Fresh'nd-Aire" helps end sleepless, misery-filled nights—promoting healthful rest in clean, washed air.



It's plugged in during WINTER

Ends dry, parched, overheated indoor air. Helps reduce "colds", coughs, raw throats by providing healthful, moisturized air. Filters out dust, dirt, smoke and odors. Protects home furnishings. Effects savings on space heating costs, giving more comfort at lower room temperatures.



QUICK FACTS—Circulates 13,000 cu. ft. of moisturized air into room per hour. Easily portable. Needs no water pipe connection. Designed for use by home owners and renters. Approved by Underwriters' Laboratories. 115 volts AC, 60 cycles.

Write for complete information

FRESH'ND-AIRE COMPANY

A Division of CORY CORPORATION

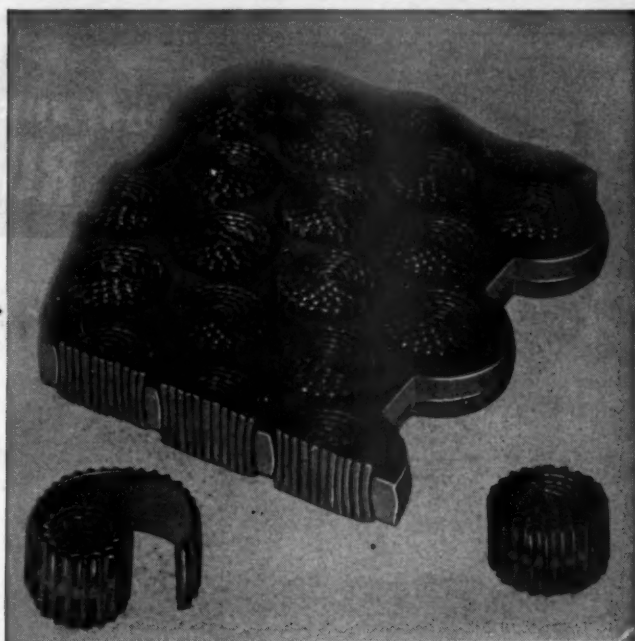
Makers of the famous FRESH'ND-AIRE CIRCULATOR

"Successor to the Fan"

221 North LaSalle Street

Chicago 1, Illinois

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EXIDE SWITCHGEAR CONTROL BATTERIES ...with the manchester positive plate

The Exide Battery with the manchester positive plate is engineered to meet switchgear control requirements. This plate is of unique lead button construction. The buttons... rolled strips of corrugated lead... are forced into holes of a special lead-antimony grid. Forming action expands the buttons and locks them securely in place. The result... tremendous reserve power, long life, trouble-free performance.

Exide Batteries have earned the confidence of engineers everywhere. Their widespread use for control bus operation and other storage battery tasks is proof of their dependability, long life and low cost maintenance.

Whatever your storage battery problems may be, Exide engineers will be glad to help you solve them.

Exide

BATTERIES

1888...Dependable Batteries for 60 Years...1948

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

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WHERE RUST THREATENS...
Protect with **RUST-OLEUM**

IT SAVES METAL...
LASTS
LONGER

THIS Free BOOKLET
TELLS HOW



RUST-OLEUM IS A POSITIVE RUST PREVENTIVE. Its enduring coating seals metal against the ravages of rain, snow, dampness, fumes and other destructive, rust-forming conditions. Public utilities save on maintenance costs by using Rust-Oleum. Tough, elastic weatherproof—it adds years of protection to all metal surfaces. **RUST-OLEUM CAN BE APPLIED DIRECTLY OVER RUSTING METAL**—by brush, dip or spray. It outlasts ordinary protective materials two to ten times depending on conditions.

Complete engineering service is available. Rust-Oleum stocks are carried by distributors in principal cities.

Saves 3 Ways **ON MAINTENANCE**

- **Less Preparation.** No sandblasting or chemical rust dissolvers are necessary. Simply wire-brush to remove scale, dirt, etc.—then **APPLY RIGHT OVER THE RUST.**
- **Goes on Faster.** Rust-Oleum can be applied in 25% less time... It covers 40% more area per gallon.
- **Lasts Longer.** Rust-Oleum outlasts ordinary materials two to ten times depending on existing conditions.

GET ALL THE FACTS—MAIL THIS COUPON NOW!

RUST-OLEUM CORPORATION
2457 Oakton Street, Evanston, Illinois

Please send me a free copy of the new Rust-Oleum Catalog of color selections and recommended uses.

Name

Title

Company

Town State

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FROM FLAME



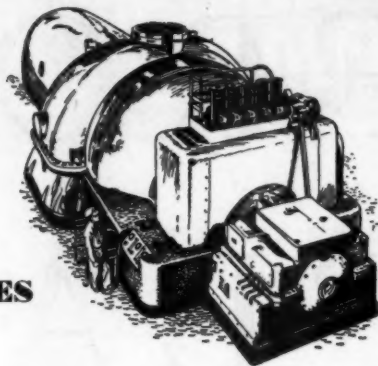
Chilled foods and plenty of ice cubes when summer sizzles. Broiled steaks for a hungry man. A warm bath for a weary one. Homes heated against winter. And, always, gallons upon gallons of hot water at a faucet's turn.

All from flame. All from the quick, clean heat of a gas burner. Brooklyn Union pipes this pleasant living into hundreds of thousands of homes in Brooklyn and Queens, has served them well for 99 years.

Our people are pledged to look forward and to work for the good of the gas industry and the more than eight hundred thousand customers we serve.

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Here you will find a department devoted solely to public utility matters. It is staffed with men of broad practical experience in the industry and supervised by a Vice-President with a background of more than 30 years in public utility management, **TOM P. WALKER.**

Through this Department, of course, you have the benefit of the advice and counsel of the bank's experienced officers—and, needless to say, access to all the deposit, loan and corporate agency facilities of a large commercial bank.

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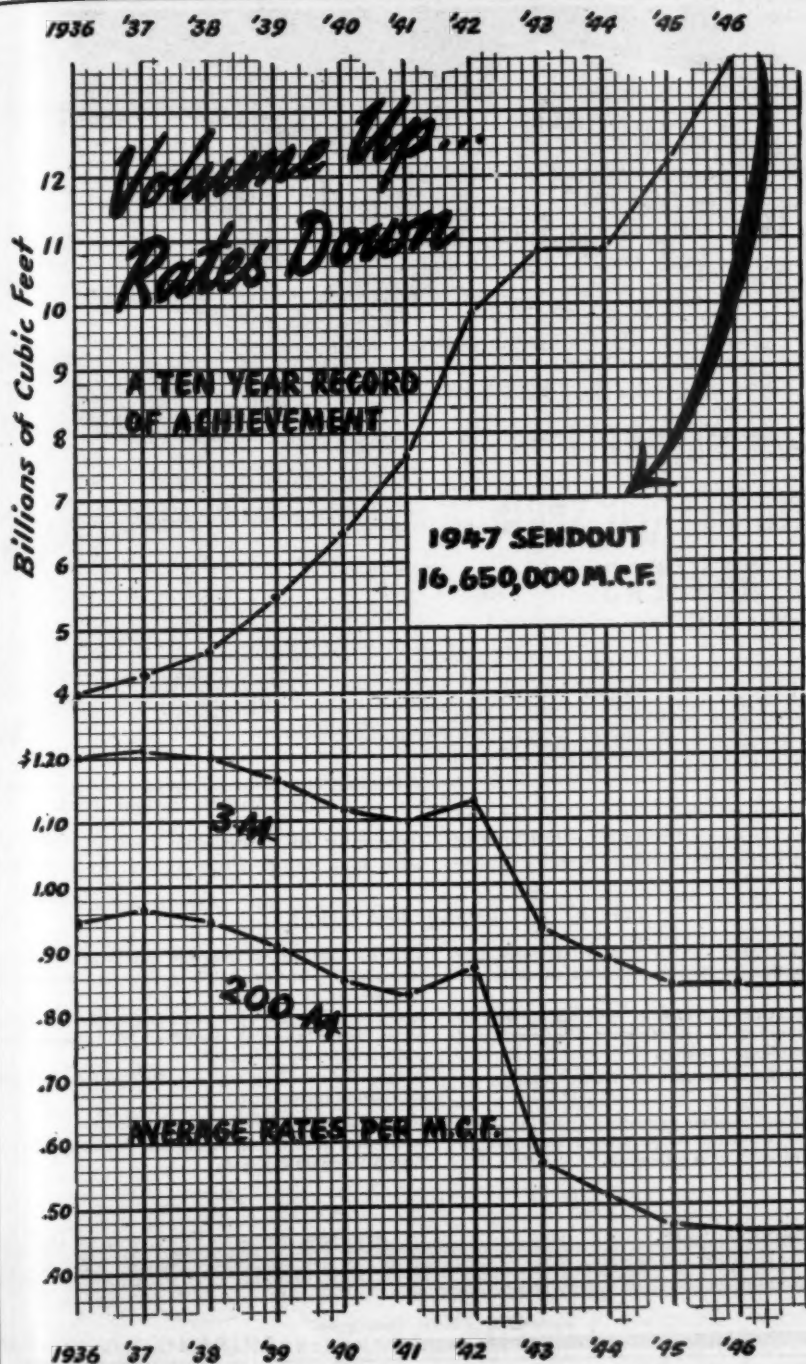
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**Flexible support
for pipe that
S-T-R-E-T-C-H-E-S**

with **GRINNELL
PRE-ENGINEERED SPRING
HANGERS**

Selecting hangers for piping subject to thermal movement is completely simplified. Grinnell Pre-Engineered Spring Hangers are available in stock sizes for any load requirement.

Simply compute the load and order the proper size Grinnell Pre-Engineered Spring Hanger as indicated in the Capacity Table

LOOK AT THESE FEATURES . . .

The maximum variation in supporting force per $\frac{1}{2}$ " of deflection is $10\frac{1}{2}\%$ of rated capacity—in all sizes.

Guides prevent contact of coils with casing wall or hanger rod and assure continuous alignment and concentric loading of spring.

Compact—minimum headroom made possible by precompression*.

Precompression* assures operation of spring within its proper working range where variation in supporting force is at a minimum.

Flexible suspension of piping in one of world's largest catalytic cracking plants

appearing in descriptive catalog. 14 sizes with load range from 84 lbs. to 4,700 lbs.

All-Steel welded construction meets pressure piping code. 14 sizes available from stock—load range from 84 lbs. to 4700 lbs.

Easy selection of proper sizes from simple capacity table. Installation is simplified by integral load scale and travel indicators.

Unique swivel coupling provides adjustment and eliminates turnbuckle.

*Precompression is a patented feature.

Write for descriptive folder on Pre-Engineered Spring Hangers Fig. 268.

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WHENEVER PIPING IS INVOLVED

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● Newport News has received contracts for all fifteen of the turbine units awarded thus far for Grand Coulee Dam, the world's greatest power installation. With individual ratings at 150,000 and 165,000 h.p. at 330-foot net head, they are the highest-powered hydroelectric units ever built.

The engineering, efficiency, and workmanship of Newport News built water power equipment has been proven by installations in many of the world's great power developments.

NEWPORT NEWS SHIPBUILDING AND DRY DOCK COMPANY

NEWPORT NEWS, VIRGINIA

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(Professional Directory Continued on Next Page)

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Complete Plants, Additions or Installations . . .
every detail geared to more profitable operation.

See Swarts Files, Refinery Catalog, etc. for details

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and

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INDEX TO ADVERTISERS

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A

Albright & Friel, Inc., Engineers	55
Amarillo Gas Company	35
American Appraisal Company, The	52

B

Babcock & Wilcox Company, The	16-17
Barber Gas Burner Company, The	3
Barber-Greene Company	Inside Back Cover
Black & Veatch, Consulting Engineers	55
Brooklyn Union Gas Company, The	47

C

Carter, Earl L., Consulting Engineer	55
Clayton Gas Company	35
Cleveland Trencher Co., The	22
Columbia Gas System, The	5
*Combustion Engineering Company, Inc.	

D

Dalhousie Gas Company	35
Day and Zimmermann, Inc., Engineers	52
Dayton Power & Light Company, The	25
Dodge Division of Chrysler Corp.	20

E

Ebasco Services, Incorporated	29
Electric Storage Battery Company, The	45
Electrical Testing Laboratories, Inc.	52
Estate Heatrola Division, The	Inside Front Cover

F

First Boston Corporation, The	34
Ford, Bacon & Davis, Inc., Engineers	52
Fresh'nd-Air Company	44

G

General Electric Company	Outside Back Cover
*GMC Truck and Coach Division	
Gilbert Associates, Inc., Engineers	52
Gilman, W. C., & Company, Engineers	55
Grinnell Company, Inc.	50

H

Haberly, Francis S., Consulting Engineer	55
Harris, Frederic R., Inc., Engineers	52
Hawkins & McCoy, Contractors	53
Hoosier Engineering Company	53

I

Indiana Gas & Water Company, Inc.	27
*International Business Machines Corporation	
International Harvester Company, Inc.	32
Irving Trust Company	48

J

Jackson & Moreland, Engineers	55
Jensen, Bowen & Farrell, Engineers	55

K

Kinlear Manufacturing Company, The	
Kuljian Corporation, The, Engineers	

L

Laclede Gas Company	
Leffler, William S., Engineers	
Leob and Eames, Engineers	
Long Island Lighting Company	
Lougee, N. A., & Company	
Lucas & Luick, Engineers	

M

Main, Chas. T., Inc., Engineers	
Marcoid Corporation, The	
Merrill Lynch, Pierce, Fenner & Beane	
Michigan Consolidated Gas Company	
Minneapolis Gas Company	
Montana-Dakota Utilities Company	

N

Newport News Shipbuilding & Dry Dock Co.	
--	--

O

Oklahoma Natural Gas Company	
------------------------------	--

P

Pacific Gas & Electric Company	
Penn-Union Electric Corporation	
Pioneer Service & Engineering Co.	
Pittsburgh Plate Glass Company	
Pritchard, J. F., & Company	

R

Recording & Statistical Corp.	
Register, Robert T., Consulting Engineer	
Remington Rand Inc.	
Robertson, H. H., Company	
Rust-Oleum Corporation	

S

Sanderson & Porter, Engineers	
Sargent & Lundy, Engineers	
Schulman, A. S., Electric Co., Contractors	
Sherman, H. B., Mfg. Co.	
Sloan, Cook & Lowe, Consulting Engineers	
Southern Natural Gas Company	
Southern Union Gas Company	
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Standard Research Consultants, Inc.	
Steinberger, E. A., Engineer	

T

Twentieth Century Press, Inc., The	
------------------------------------	--

U

United Engineers & Constructors, Inc.	
United Gas Improvement Company, The	
United Light & Railways Company	

W

Washington Gas Light Company	
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West Texas Gas Company	
White, J. G., Engineering Corporation, The	

Professional Directory 52-55

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